Pamphlet
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TELEPHONE STATISTICS OF THE WORLD

AMERICAN TELEPHONE & TELEGRAPH CO.
OFFICE OF STATISTICIAN
MAY 1, 1912

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TELEPHONE STATISTICS OF THE WORLD

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ISSUED MAY, 1912
NEW YORK CITY

AMERICAN TEL. & TEL. CO.
OFFICE OF STATISTICIAN

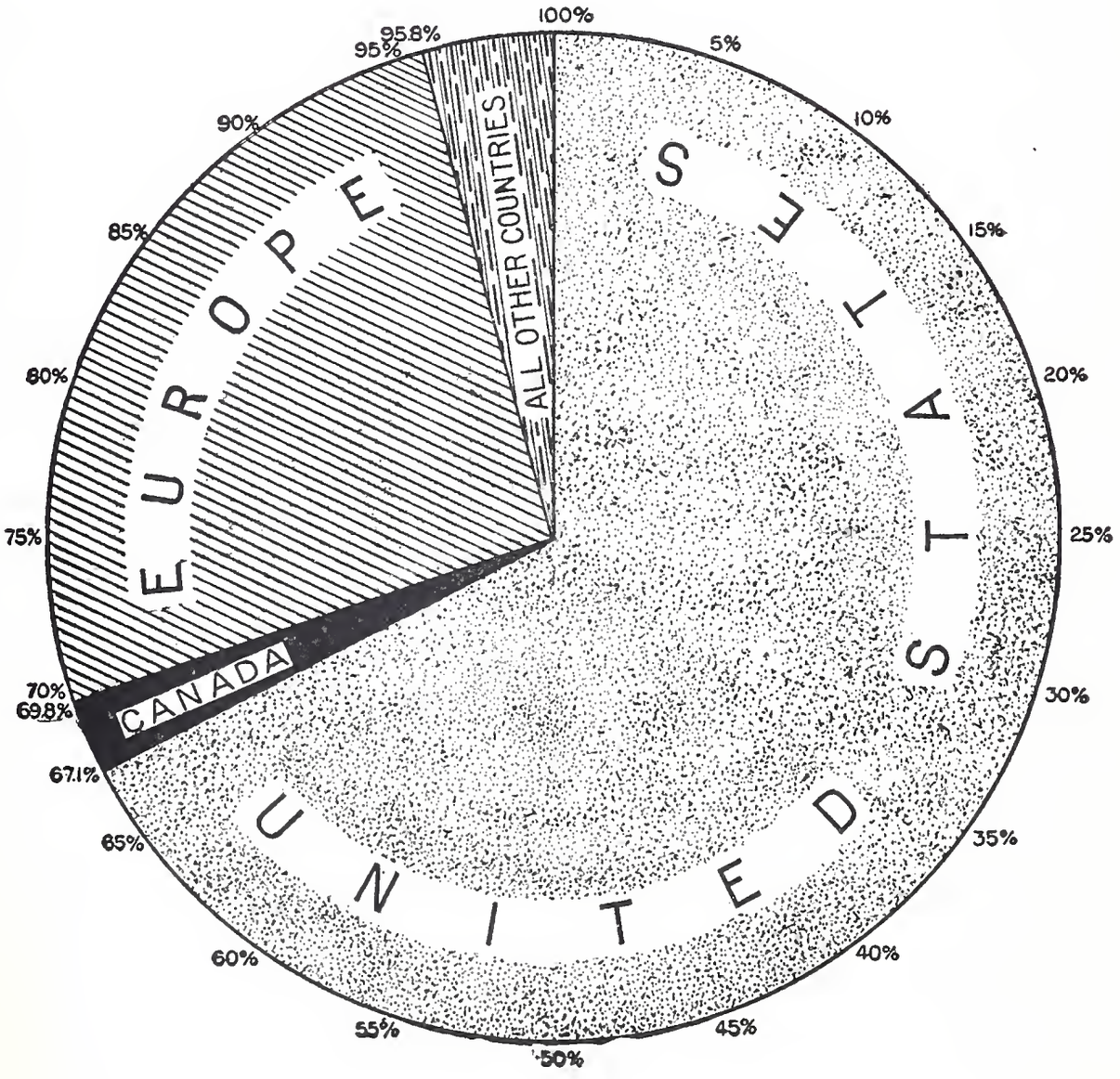
164338

DISTRIBUTION OF THE WORLD'S TELEPHONES

JANUARY 1, 1912.

12,453,000

(Partly Estimated)



TELEPHONE STATISTICS OF THE WORLD

1. Condition January 1, 1912 and Progress During 1911.

There were approximately 12,453,000 telephones and 29,566,000 miles of telephone wire in use in the world January 1, 1912. Compared with January 1, 1911, this is an increase of 10% in telephones and 9% in wire. A careful estimate places the world's telephone investment January 1, 1912, at about $1,729,000, which is very nearly the value of all gold coin and bullion in the United States. The annual number of telephone conversations may be placed at 22,000,000,000, which is about five times the annual number of passengers carried by all the railroads of the world.

For the purpose of this compilation the world's telephone statistics are generally tabulated in four territorial divisions, as follows:

	Telephones Jan. 1, 1912			Wire Jan. 1, 1912		
	Number (partly estimated)	Increase over Jan. 1, 1911	Per cent to Total	Miles (partly estimated)	Increase over Jan. 1, 1911	Per cent to Total
United States.....	8,362,000	10%	67.1%	18,179,000	9%	61.5%
Canada	335,000	18%	2.7%	788,000	11%	2.6%
Europe	3,239,000	9%	26.0%	9,461,000	8%	32.0%
All other countries.	517,000	21%	4.2%	1,138,000	32%	3.9%
Total	12,453,000	10%	100.0%	29,566,000	9%	100.0%

The geographical distribution of telephones and wire is shown below:

	Number of Telephones (Partly Estimated)			Miles of Wire (Partly Estimated)		
	Jan. 1, 1912	Jan. 1, 1911	Increase	Jan. 1, 1912	Jan. 1, 1911	Increase
North America....	8,729,000	7,907,000	822,000	19,037,000	17,401,000	1,636,000
South America....	120,000	86,000	34,000	233,000	137,000	96,000
Europe	3,239,000	2,966,000	273,000	9,461,000	8,762,000	699,000
Asia	166,000	149,000	17,000	358,000	288,000	70,000
Africa	41,000	34,000	7,000	144,000	128,000	16,000
Australasia	124,000	110,000	14,000	265,000	212,000	53,000
Oceanica	17,000	8,000	9,000	43,000	15,000	28,000
West Indies	17,000	12,000	5,000	25,000	19,000	6,000
Total	12,453,000	11,272,000	1,181,000	29,566,000	26,962,000	2,604,000

The year 1911 is the thirty-fifth since the invention of the telephone by Prof. Alexander Graham Bell. A survey of the progress of telephone service during the past year, and of the many notable events in connection with this progress, justifies the statement that all civilized nations have awakened to the value of the telephone in commercial and social life.

Of the various economic and social forces that underlie the recent telephone progress outside of the United States, one of the most important, and one of far reaching consequence, is the gradual abolition of rate systems that have proved inadequate to the rapid popularization of the telephone, and the adoption of systems approximating the system in the United States. The telephone service of most European countries has suffered from the retention of rate systems not suitable to the needs of the public. Now, however, the difficult problem of adapting charges justly proportionate to service rendered, thus equalizing the charges among various classes of consumers, claims the attention of the Telephone Administrations of important European States. Austria is just emerging from a thorough revision of the old rate system adopted at the opening of the service, the revised schedule having gone into effect January 1, 1911. In Belgium, ever since 1908, considerable agitation has prevailed for more equitable rates. After a careful study of the problem, the Minister in charge of the Postal and Telegraph Administrations submitted (September, 1911) a new telephone rate law for the approval of the King, upon the adoption of which an era of rapid development is predicted. The German Telegraph Administration, on the other hand, has not yet succeeded in obtaining the approval of the Diet for the proposed change of telephone rates. Indeed, the law as originally drafted has had a rather checkered career. In 1906, in accordance with a resolution of the Reichstag calling for a reform, the Government elaborated a new schedule. This was submitted to a committee of officials and representative business men, January, 1908. In a revised form it reached the Diet, which immediately referred it to a Budget Committee. In November, 1909, the bill was again submitted, and was again referred to a Budget Committee, which (December, 1910), adopted a compromise embodying further changes. Early in 1911 the bill, as modified, came back to the Diet for a second reading, with the same result—a return to the Budget Committee. The latter prepared a second compromise, but adjourned without further action. What the final outcome will be is a matter of conjecture. The Swiss Republic, in consequence of the rate schedule adopted in 1896, faces the problem of equilibrating telephone revenue and expenses. As early as 1903 the Federal Council submitted a report calling for an increase in rates, but political and other considerations prevented the adoption of this recommendation. In 1910 the Federal Council again issued a message on the question of increasing telephone rates. By instruction of the Swiss Parliament, however, the Council was requested to obtain more complete data on average costs and to recast the entire telephone accounts according to commercial accounting principles. The result of such an investigation was embodied in a special report, issued March, 1911, which showed that as figured by the Committee, the financial result of twenty-nine years of telephone operation is a deficit of several million francs. With that report was coupled the recommendation that the annual telephone revenue be increased by at least one million francs by increasing both exchange and toll rates. In consequence of the amalgamation of the four British colonies that constitute the Union of South Africa, the central telephone administration is preparing a new telephone rate schedule.

Italy, France, Russia, Japan, and the Commonwealth of Australia contemplate a thorough reorganization of their telephone service, while Imperial China took the first steps toward the general introduction of the telephone.

The Italian Government, by special legislation, has provided $600,000 for the rapid extension of its telephone service. Moreover, the recent report of the Government by the Royal Telephone Commission, strongly recommends an additional expenditure of $30,000,000 between 1911 and 1928. France, by a decree of July, 1911, has sanctioned the expenditure of $2,250,000 for the construction and extension of the Paris exchange. Great Britain, in the Telephone Transfer Bill recently passed, has voted $20,000,000 for the development of its telephone service after the transfer. Again, the German Government has authorized an eleventh special appropriation, amounting to $5,280,000, for the extension of its telephone service during 1912. Finally, the budget of the Commonwealth of Australia provides $3,000,000 for its telephone and telegraph services, besides creating a special fund of $3,000,000 to be drawn on during the next two years.

The prospect for telephone growth in South and Central America has considerably improved. On January 1, 1912, these two continents, with a population of about 54,000,000—or lacking 10,000,000 that of the German Empire—showed a telephone development of about one telephone to every 500 persons as compared with one telephone to every 62 persons in the German Empire. The best developed state in South America is Argentine, with a total of about 68,000 telephones; that of Central America is Panama, with a total of about 1,800 telephones. On account of the greatly improved commercial activities both of South and Central America, there is good reason to think that the telephone service is destined to achieve considerable proportions in the near future.

During 1911 the Imperial Government of China formulated a definite program for extending the telephone service, and included in that program provisions for the gradual establishment of manufacturing plants of electrical apparatus.

The Japanese Government is still hard pressed to furnish telephone service to waiting applicants. According to latest reports, there are over 45,000 persons on the waiting list, and that number increases by about 3,000 per month. So far the Administration has been able to connect only 25,000 subscribers per year. The Administration had worked out a second program of telephone expansion and appropriated $12,000,000 for the five years ending March 31, 1913. This plan has been found to be totally inadequate to the needs, and thus a third program, providing $25,000,000 for the five years after 1913, is under consideration.

Noticeable progress has also been made in the various states constituting Australia and New Zealand. These two dominions have about 124,000 telephones, or 2.3 per 100 population. It is worth while to recall in this connection that the combined area of Australia and New Zealand is about equal to the area of the United States.

The recently created Union of South Africa likewise shows progress as regards the telephone service. January 1, 1912, there were about 17,000 stations in the Union, or 0.3 per 100 population. Omitting the native population, which is nearly 80% of the total, however, the Union has a telephone development of 1.3 per 100 population.

The above facts indicate that telephone service outside the United States is destined to progress for some years at a more rapid pace than heretofore.

During the past year the long distance telephone service of the world has received notable extensions. In the United States commercial service was opened between New York and Denver, 2,160 miles, this being now the longest distance over which oral communication is given commercially In Europe long distance service has been greatly extended by utilizing both the new loaded cable between Great Britain and Belgium—by which telephone service is expected to be given between London and Berlin—and the new telephone cable, constructed also on the Pupin principle, between Dover and Calais. The latter enables conversation to be carried on between Glasgow, Edinburgh and Paris, and also between Aberdeen and the French capital, a distance of 910 miles. Successful trials have also been made between London and Geneva, a distance of 560 miles, and from London to Basel, a distance of 600 miles.

Recent progress in the art of submarine telephone cable manufacture will have far reaching consequences. At the present time there are over 400 miles of submarine telephone cable in use in the world, and of this total about one-half is represented by the four cables between France and England, and the two between Belgium and England. The longest submarine telephone cable lies between La Panne (Belgium) and St. Margaret's Bay (England), a distance of 55 miles.

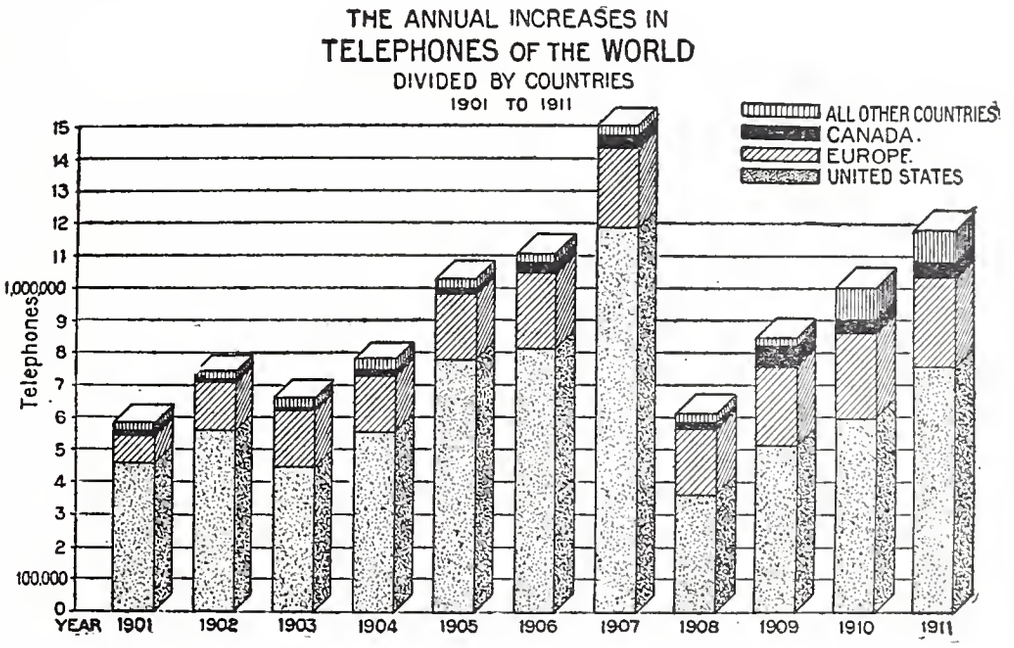
The European international long distance land line systems have likewise received important additions, due to the opening of the line between Paris and Madrid, 900 miles, and the direct line between Berlin and Rome still under construction, a distance of over 1,000 miles. As regards the Continent, there is now scarcely any important city that cannot talk with any other important city. By far the largest interurban or toll telephone plant in Europe has been built by the German Government, which according to the latest official statistics, had about one-half of the total interurban or toll telephone wire of Europe.

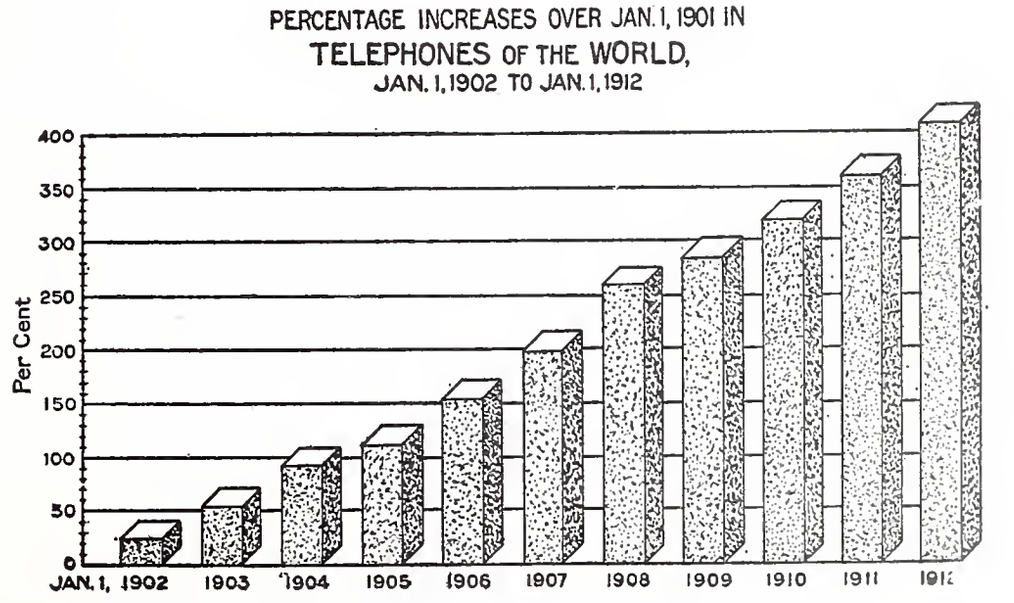
Finally, it is worthy of note that during the year 1911 the great United States railway systems have made rapid advances toward the general use of the telephone for train dispatching. Since the introduction of the use of the telephone for that purpose, over 200 of the United States railroads have adopted that system. In fact, the telephone has supplanted the telegraph on over 50,000 miles of railroad, which is over 20% of the total railroad mileage of the country. A careful estimate places the miles of wire used by railroad companies for train dispatching at 12,000, and the corresponding number of telephones at 10,000.

2. Growth During Past Ten Years

The two charts below show the annual increases in telephones of the world from 1901 to 1911 inclusive. The first represents the actual increases and shows that during 1911 the increase was more than twice that during 1901. It also appears that during 1910 the annual increase in telephones of the world again reached the million mark. The second represents, at the beginning of each year, the percentage increase over Jan. 1, 1901. While the telephone business has been increasing constantly, two decided periods of retarded telephone progress are noticeable, especially so for the United States. The first commences with the year 1903, and the second—and by far the greater—with the year 1908. This retardation of telephone progress, particularly in the United States, was caused by the general depressed financial condition of the country, which is evidenced by the following facts:

Comparing the years 1907 and 1908, the gross earnings of ten of the leading United States railroads decreased $88,500,000; the building and real estate returns $95,000,000; and the total bank clearings, which in 1906 were $160,000,000,000, had declined to $132,000,000,000 in 1908. Furthermore, liabilities of failures, which in 1906 were $123,000,000, more than doubled during 1907 and were $259,000,000 in 1908.



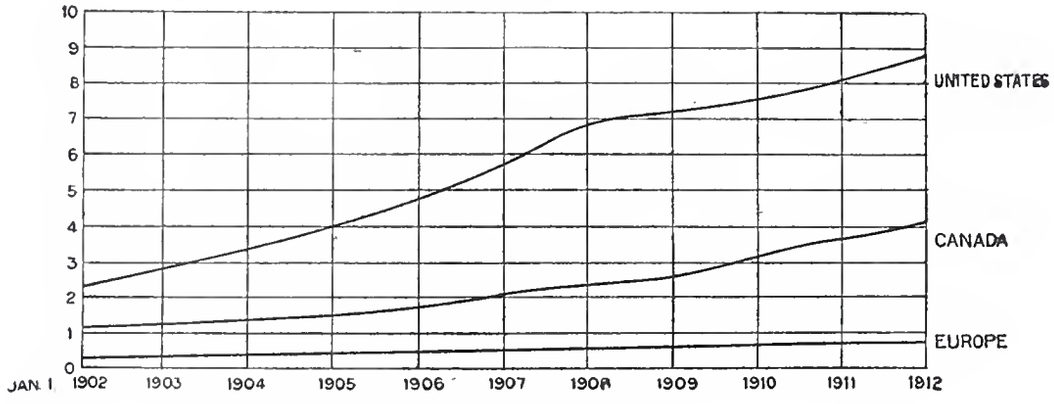


Considering telephones per 100 population and referring only to the United States, Canada and Europe, the following chart shows their respective condition during the past ten years. At the beginning and end of the period the exact figures are:

	United States	Canada	Europe
Jan. 1, 1902	2.3	1.2	0.3
Jan. 1, 1912	8.8	4.2	0.7

From this it appears that it takes Europe about two years to advance 0.1. Assuming that European telephone progress continues at this rate, to reach the present development of the United States (8.8), Europe must gain 8.1, which at the rate of 0.1 every two years would require 162 years. As such a forecast makes no allowance for the impetus in future progress due to the use of rates better adapted to the needs of the public and important advances in the art, the above period will be shortened materially. One thing, however, is certain: Europe offers yet a vast field for telephone progress, because at the beginning of 1912 it has reached only the development of the United States Jan. 1, 1898.

TELEPHONES PER 100 POPULATION
UNITED STATES, CANADA AND EUROPE
1902 to 1912



The two charts shown opposite relating to the increase in the telephone wire mileage of the world permit a comparison between the latter and the increase in stations, covering likewise a period of eleven years. Jan. 1, 1901, the total telephone wire mileage of the world was about five million miles; at the end of the period (Jan. 1, 1912) it amounted to over twenty-nine million miles, an increase of 500%. On the other hand, the increase in telephone stations during the same period was about 400%.

Referring to the chart shown opposite representing the actual annual increases in wire mileage, we find that the increase during 1911 was twice that of 1901. The lowest annual increase occurs during the year 1901.

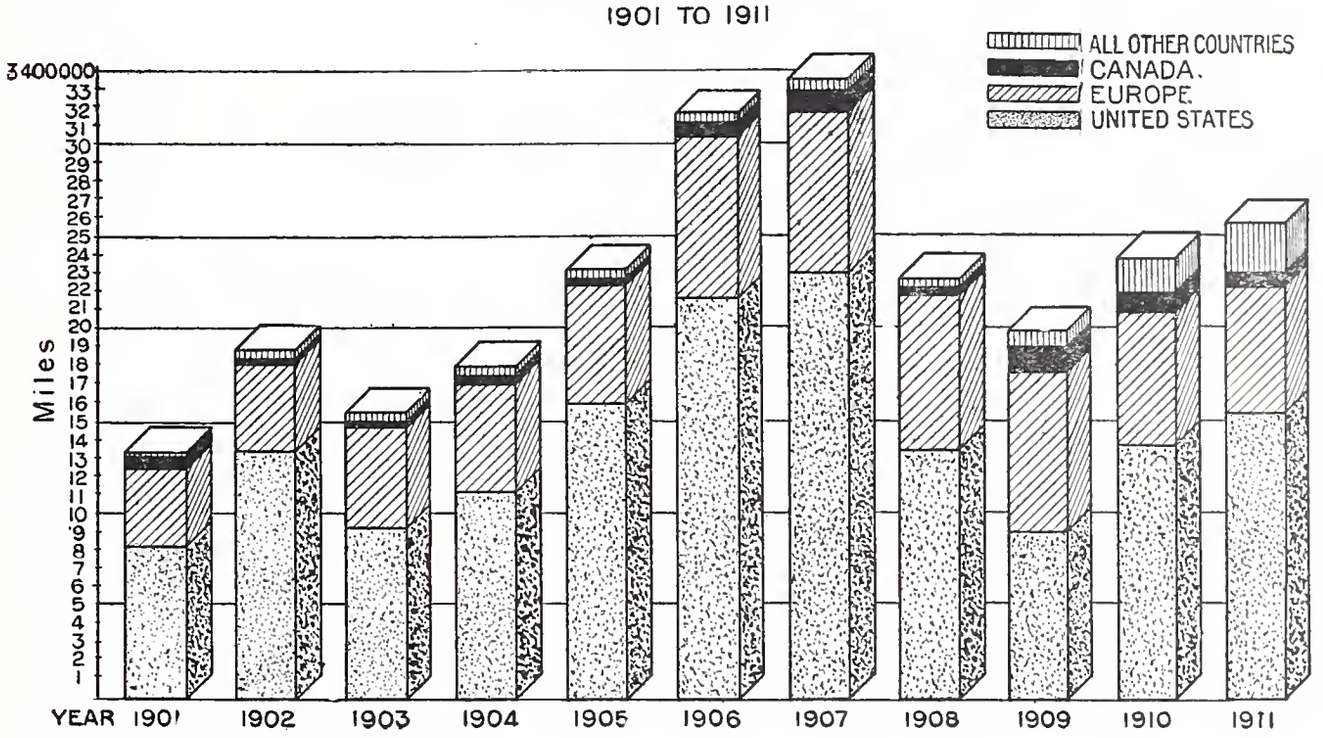
It is worthy of note that the United States, Jan. 1, 1912, had over one-half the total telephone wire of the world, and nearly twice the total mileage of Europe, while the latter at the same date had almost the same telephone wire mileage as the United States had at Jan. 1, 1907. The pronounced increase in the wire mileage of "all other countries" is largely due to more accurate information.

ANNUAL INCREASES OF

TELEPHONE WIRE MILEAGE OF THE WORLD

DIVIDED BY COUNTRIES

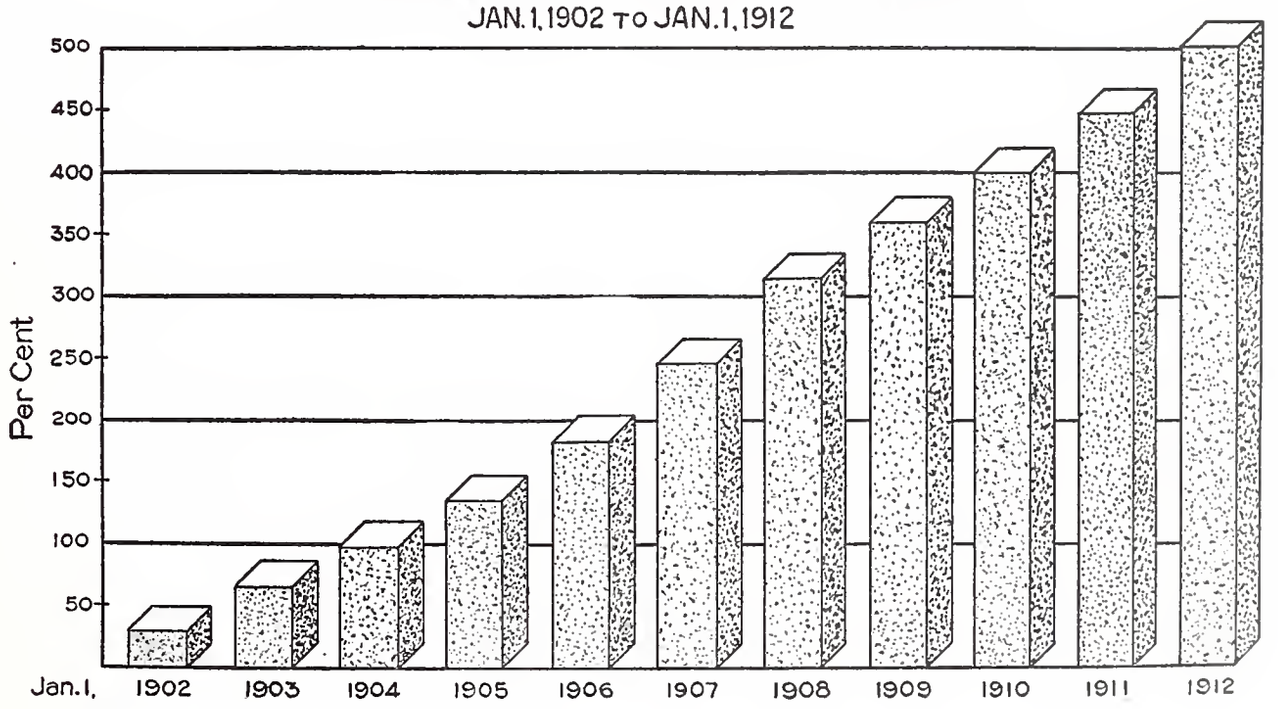
1901 TO 1911



PERCENTAGE INCREASES OVER JAN.1,1901, IN

TELEPHONE WIRE MILEAGE OF THE WORLD

JAN.1,1902 TO JAN.1,1912

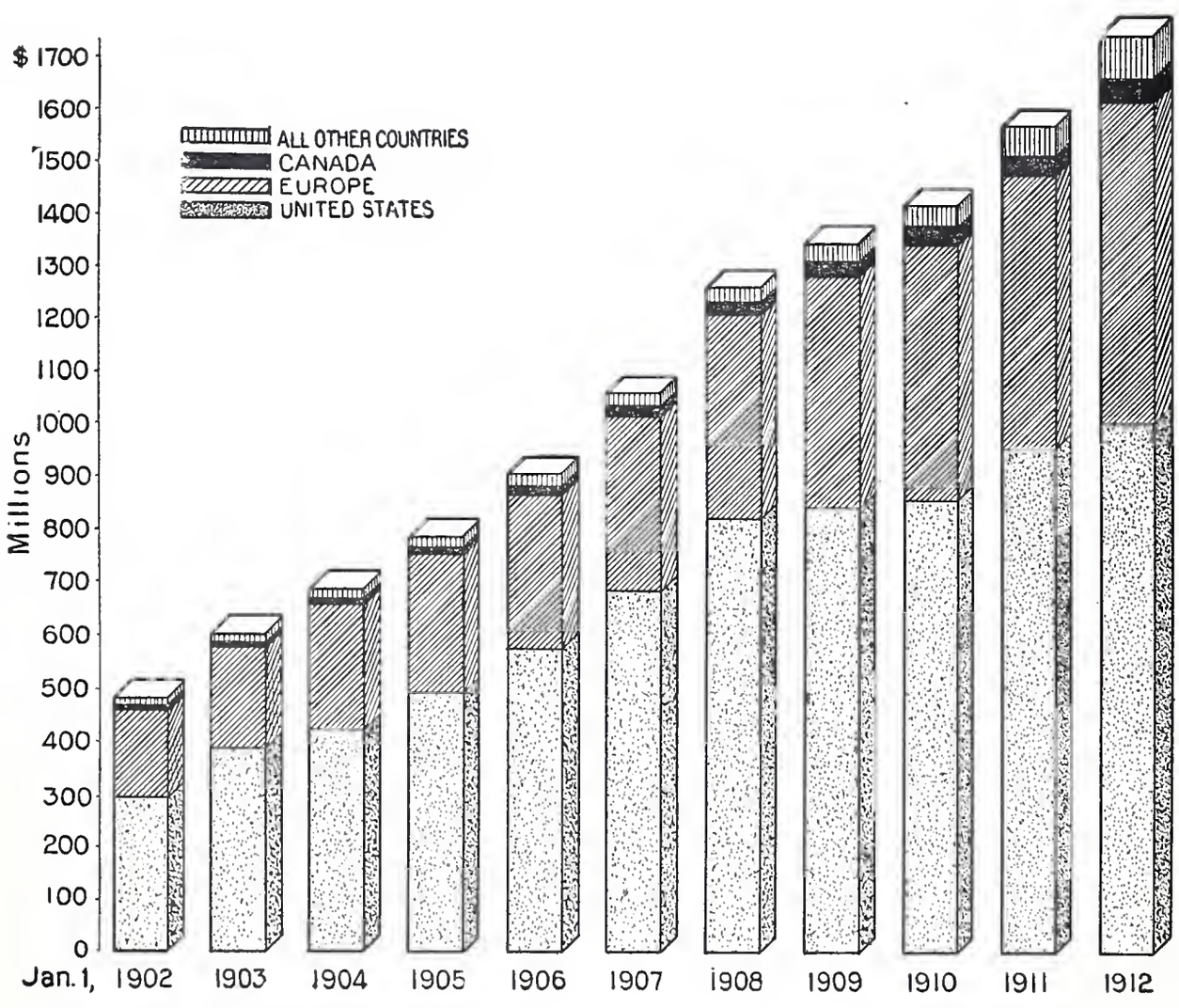


The chart below depicts the total estimated telephone investment of the world, subdivided according to territorial divisions at Jan. 1st of each year from 1902 to 1912 inclusive. During this period the world's investment almost quadrupled, increasing from $482,000,000 to $1,729,000,000 Over one-half of this enormous increase was in the United States, where the annual increase averaged approximately $66,000,000. This was about $27,000,000 more than the corresponding average increase in Europe. At the commencement of the year 1912 the total estimated investment in the United States ($1,025,000,000) was about twice that in all Europe ($593,000,000) and was over one-half the investment of the whole world. At the same date Canada is estimated to have $44,000,000 invested in telephones and "all other countries" $67,000,000.

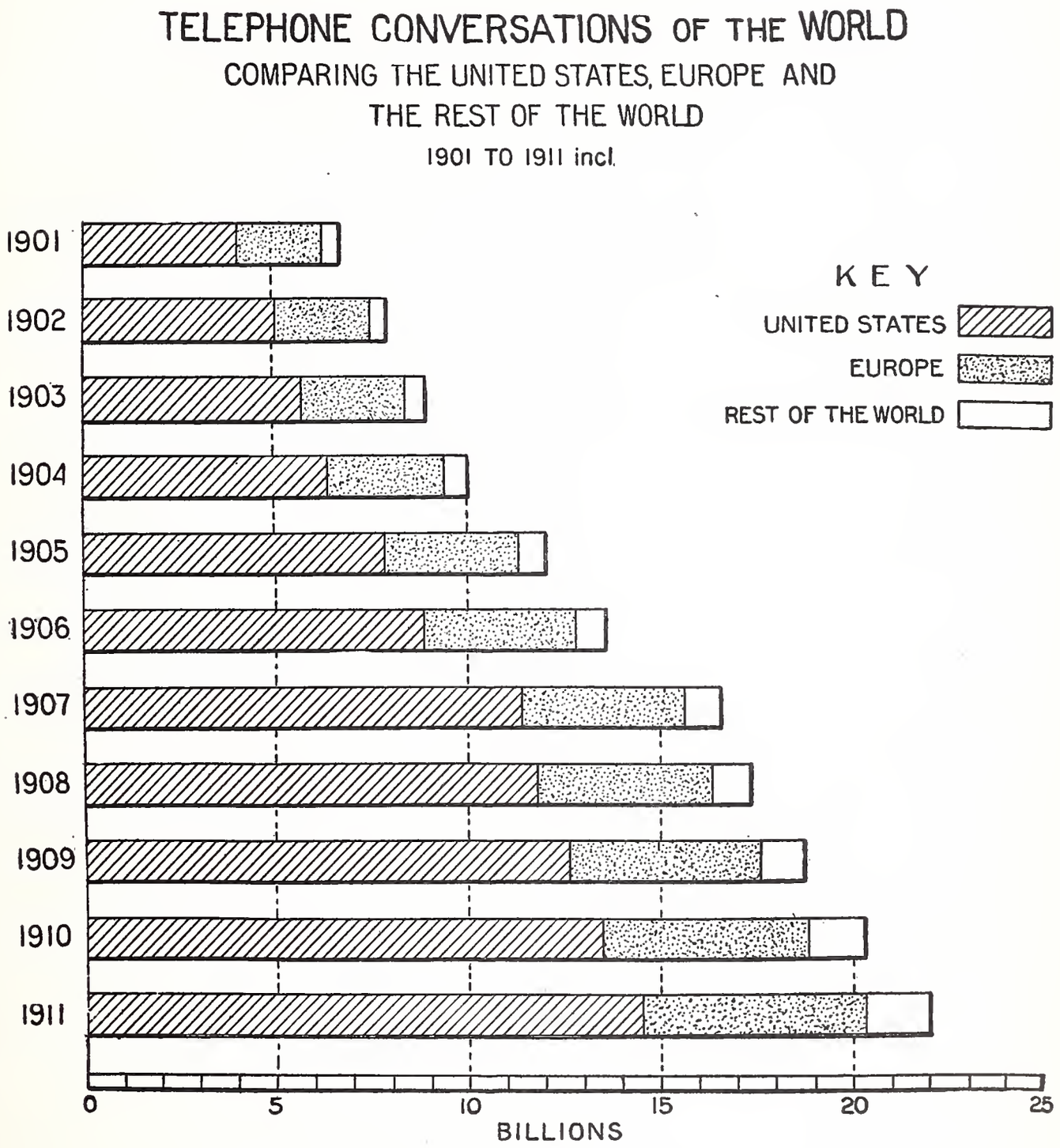
DISTRIBUTION OF

TELEPHONE INVESTMENT OF THE WORLD

JAN. 1, 1902 TO JAN. 1, 1912



The following chart depicts the telephone conversations of the world for the year 1901 to 1911 inclusive, for the United States, Europe, and all other countries, and shows the proportion of each to total.

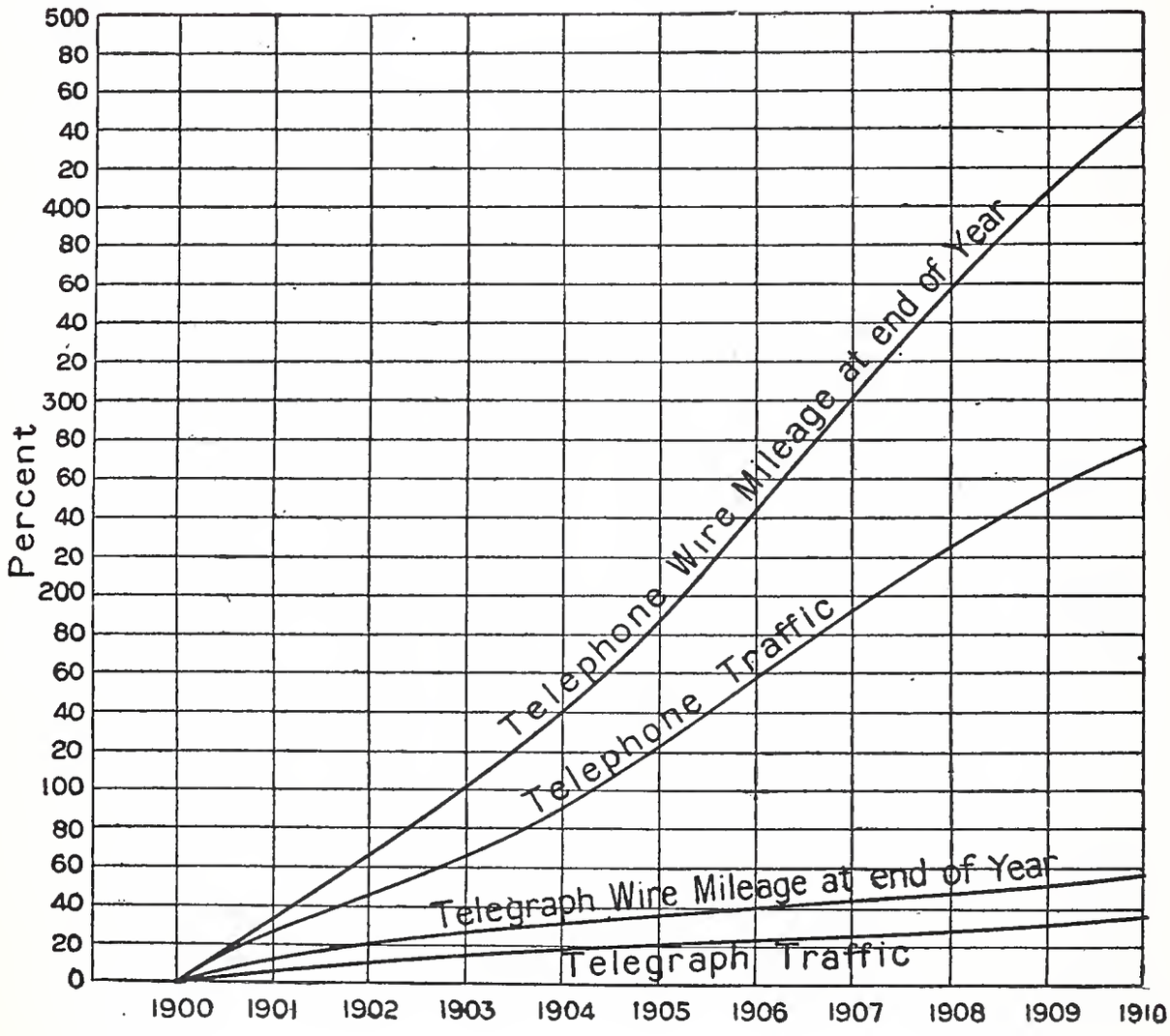


THE GROWTH OF

TELEPHONE AND TELEGRAPH TRAFFIC

AND WIRE MILEAGE COMPARED

THE WORLD



NOTE: Growth expressed as a percentage increase over the 1900 figures.

The use which the world made of the telephone in 1911 is illustrated in the subjoined table showing the distribution of conversations for the four divisions:

Division	No. of Conversations during 1911 (estimated)	Increase over 1910	Per cent of Total
United States	14,500,000,000	7%	66.0
Canada	900,000,000	18%	4.0
Europe	5,800,000,000	8%	26.4
All other countries	800,000,000	20%	3.6
Total	22,000,000,000	8%	100.0

The combined number of telephone conversations of the rest of the world is but one-half that of the United States. The telegraph traffic of the United States presents quite a contrast. Placing the world's telegraph traffic during 1910 at about 579,000,000, the United States took but 17% of the total, while Europe had 62%. In other words, Europe has about the same proportion of the world's telegraph traffic as the United States has of the world's telephone traffic.

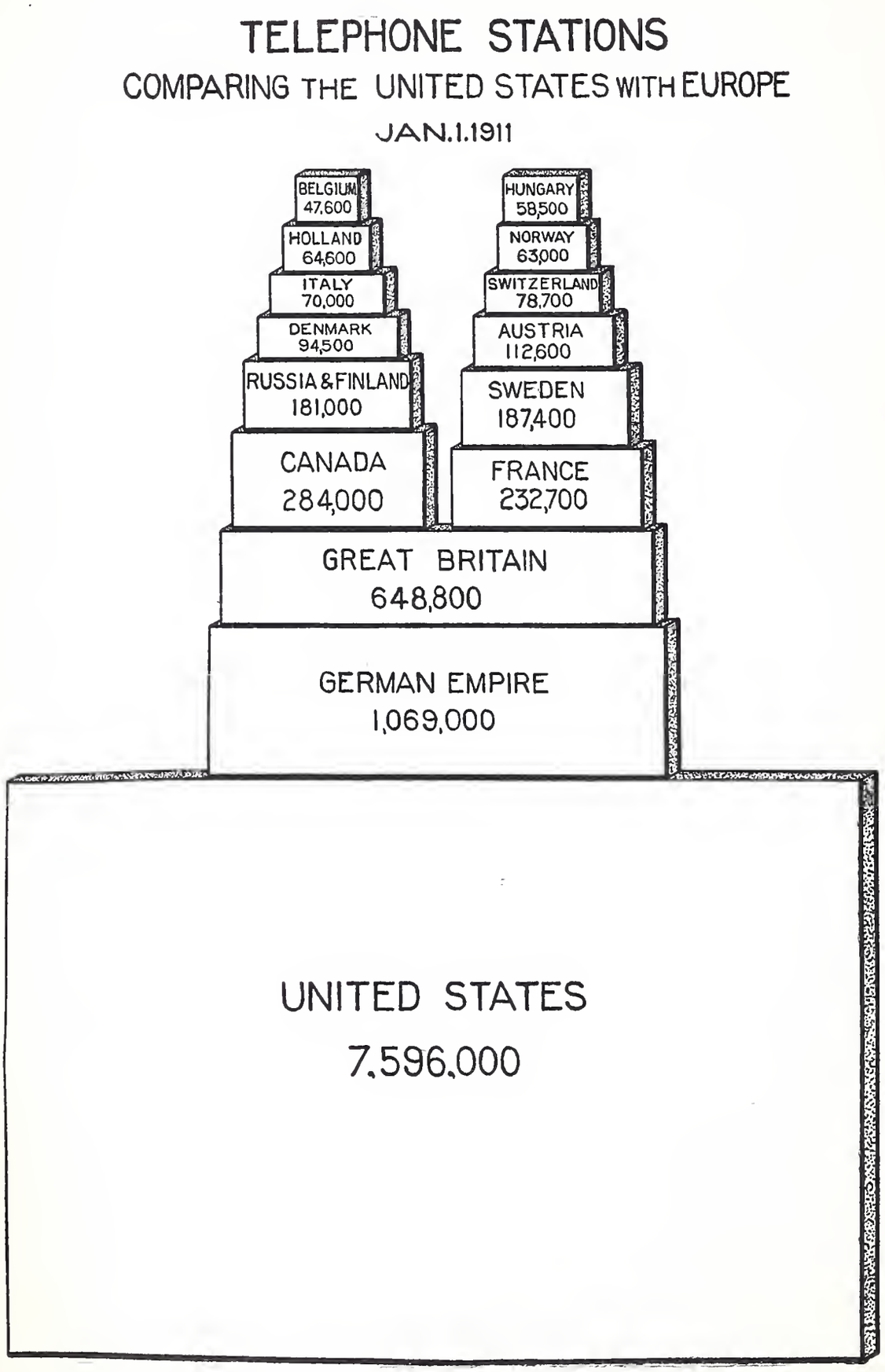
Going back to the first authentic publication of telephone traffic in the United States (1883) the total number of telephone conversations was estimated to be 217,000,000 During the intervening twenty-eight years the United States traffic has reached, as shown above, the colossal total of over fourteen billion, an increase of 6500%, or an average annual increase of 232%.

The annual increases, both in the telephone and telegraph traffic and in the wire plant of the world are shown on the chart opposite, covering the period 1900-1910. The curves represent the percentage increases over the traffic during 1900 and mileages at the end of the year, 1900.

Referring first to the traffic curves, the telephone has gained 277% and the telegraph 36%. In other words the percentage increase in telephone traffic is about eight times that in telegraph traffic. During the same period the increase in wire plant was 448% for the telephone as compared with 57% for the telegraph, so that the percentage increase in telephone wire is also approximately eight times that of telegraph wire.

3. Relative Telephone Development in Various Countries, Jan. 1, 1911

a. Telephones In Use



The subsequent statistical table shows the telephone development of the world January 1, 1911. At that date the United States had 67.4% of the total telephones, Europe had 26.3%, Canada 2.5%, thus leaving but 3.8% for all other countries. The high percentage increase during 1910 for Bosnia, Greece, and Servia, is due to the fact that these countries are just beginning to be developed.

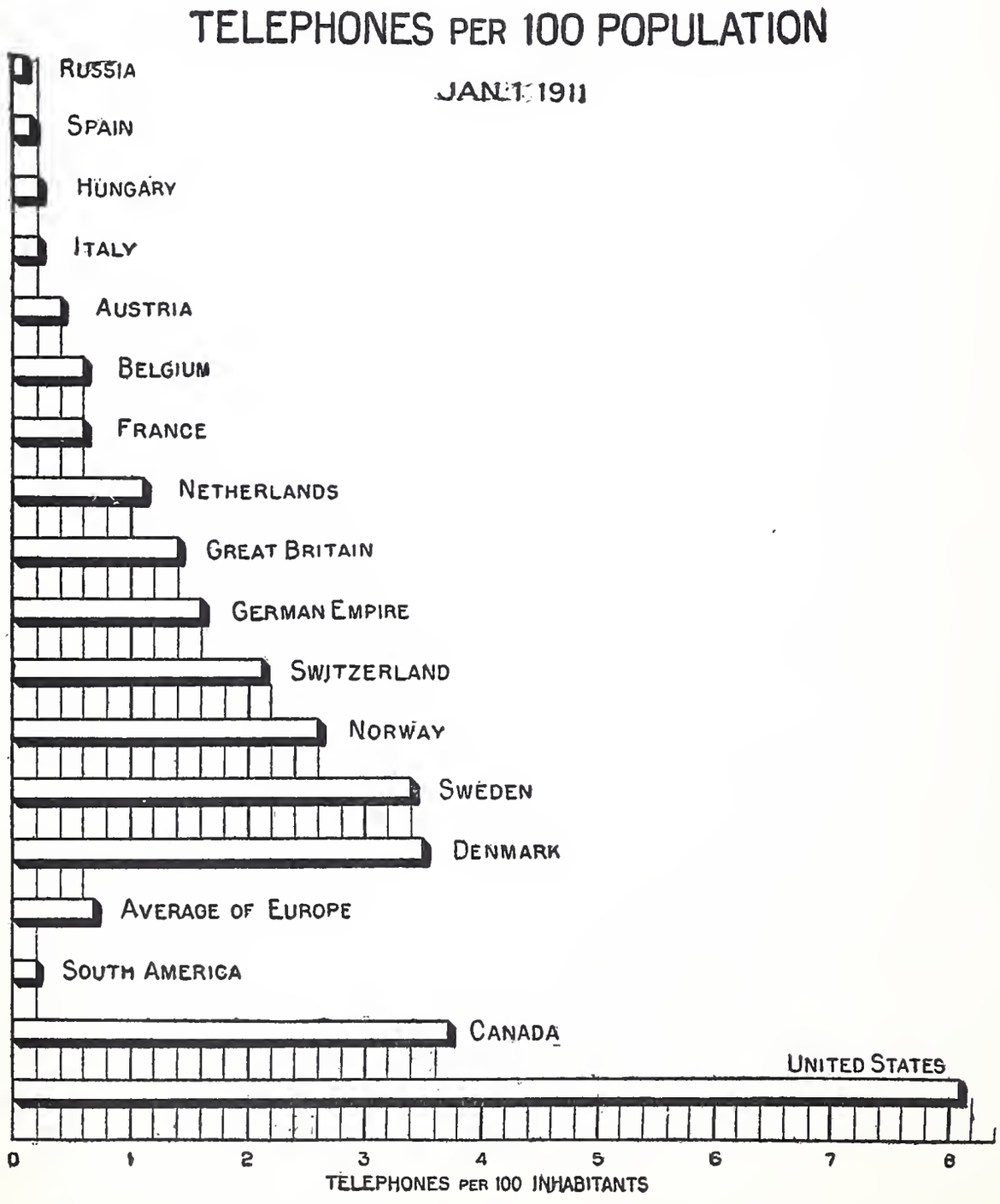
TELEPHONE DEVELOPMENT OF THE WORLD, JANUARY 1, 1911

Division	Telephones January 1, 1911.	Increase during 1910		Per cent of Total	Telephones per 100 Population	Population per Sq. Mile
		Number	%			
United States	7,595,938	600,246	8.6	67.4	8.1	30
Canada	284,373	45,184	18.8	2.5	3.7	4.7
Europe:—						
Austria	112,604	16,764	17.5	1.0	0.4	246
Belgium	47,648	4,907	11.5	0.4	0.6	663
Bosnia	747	151	25.3	..	0.04	96
Bulgaria	2,303	253	12.3	..	0.05	116
Denmark	94,531	7,095	8.1	0.9	3.5	182
Finland	30,478	..	..	0.3	1.0	21
France	232,743	21,079	9.9	2.0	0.6	190
German Empire...	1,068,849	100,748	10.4	9.5	1.6	310
Great Britain	648,832	45,235	7.5	5.8	1.4	371
Greece	1,792	290	19.3	..	0.06	107
Hungary	58,506	7,481	14.6	0.5	0.2	167
Italy	70,139	7,873	12.6	0.6	0.2	312
Luxembourg	3,334	220	7.0	..	1.3	257
Netherlands	64,620	6,207	10.6	0.6	1.1	464
Norway	63,000	5,647	9.8	0.6	2.6	19
Portugal	6,765	451	7.1	..	0.1	155
Roumania	15,000	812	5.7	0.1	0.2	137
Russia	150,850	20,377	15.6	1.3	0.1	67
Servia	2,635	1,075	68.9	..	0.1	155
Spain	25,000	196	0.8	0.2	0.13	99
Sweden	187,441	13,386	7.7	1.6	3.4	32
Switzerland	78,736	4,978	6.7	0.7	2.1	236
Total	2,966,553	265,225	9.8	26.3	0.7	119
South America	85,744	13,642	18.9	0.8	0.2	6.5
All other countries..	339,285	92,671	37.6	3.0	0.03	28
Total World	11,271,893	1,016,968	9.9	100.0	0.6	30

The table shows, that as in former years, the German Empire and Great Britain remain the leaders in European telephone development, the German Empire having about 36% and Great Britain 22% of all European telephones. Of the remaining countries, only one, France, exceeds 200,000 telephones, and only three others—Austria, Russia and Sweden—have over 100,000 telephones each. The combined number of telephones in six important European States—Belgium, Norway, Denmark, Hungary, Italy, and the Netherlands—is still less than the number of telephones in New York City, while Chicago has more telephones than France, and Boston more than Austria; the three Scandinavian kingdoms combined do not equal the total number of telephones in New York City by about 57,000.

The following chart presents graphically the statistics shown in previous table in the column "Telephones per 100 Population." Despite considerable activity in some European countries, the relative positions have not changed during the past year. Denmark still leads Sweden by a small margin. As the average for Europe January 1, 1911, was 0.7 telephones per 100 population, the development of the United States at the same date—8.1 per 100 population—was almost twelve times that of Europe. South America advanced to 0.2 telephones per 100, and Canada to 3.7, or more than five times the development of Europe.

Looking at the telephone development from the point of population per station, it appears that the United States January 1, 1911, averaged one station to each 12 inhabitants as against the European average of one to 148. Of the European States, Denmark and Sweden are about equal, the former having one station to every 28, and the latter one station to every 29 inhabitants. The German Empire and Great Britain have about twice, France six times and Austria eight times the population per station of Sweden.

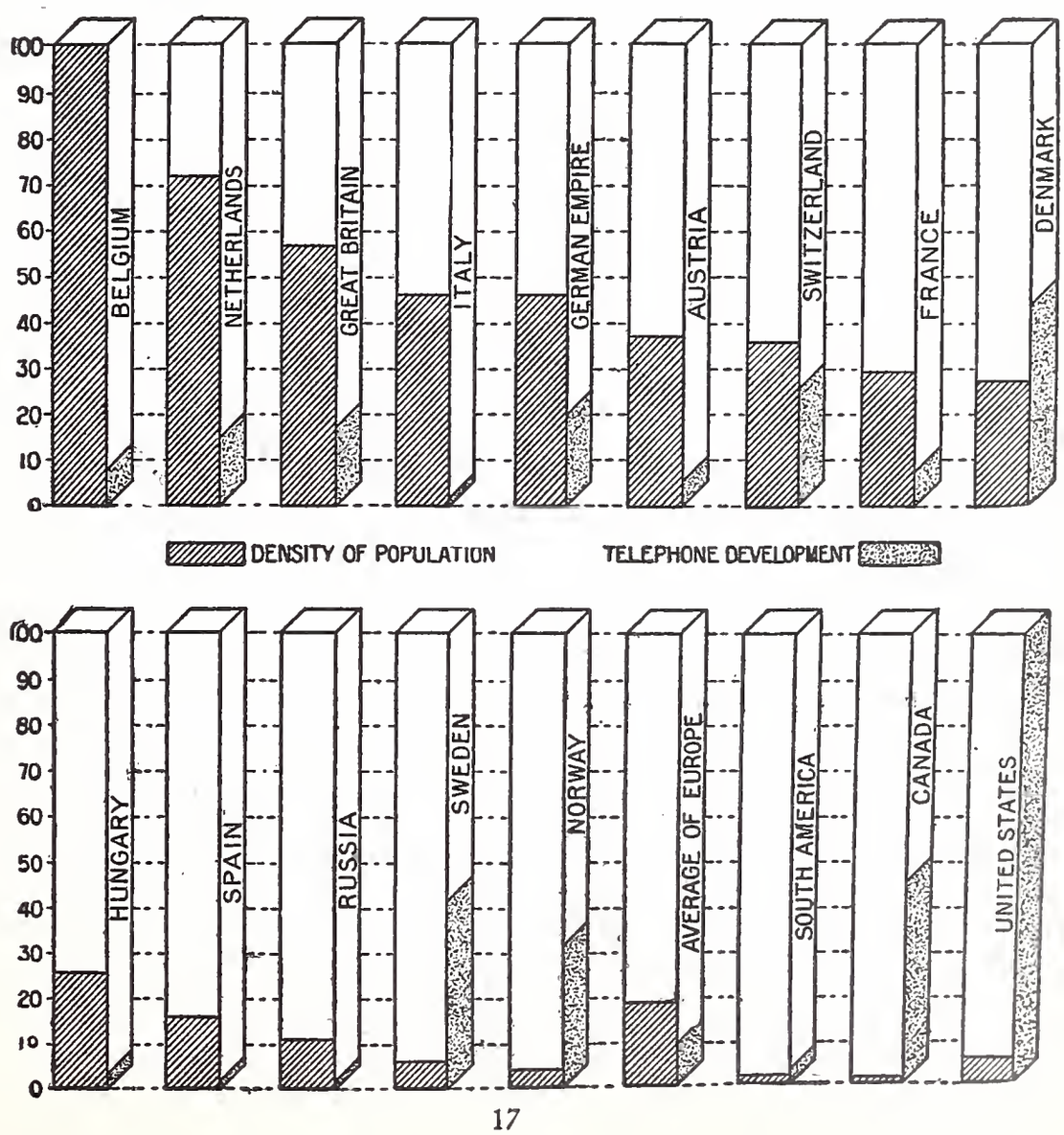


A more comprehensive view of the relation between telephone development and population is gained from the following chart. This chart compares European countries, the United States and Canada, representing in each case both population per square mile and telephones per 100 population. The greatest population per square mile is found in Belgium, which has 663 inhabitants to the square mile, and the largest number of telephones per 100 population is found in the United States, which January 1, 1911, had 8.1 telephones per 100 population.

It is evident from the chart that Canada has by far the lowest density of population; next comes South America and then Norway, while Sweden is about equal to the United States, and Italy to Germany. In telephone development Canada ranks next to the United States. Denmark and Sweden, which have about the same development, are still considerably below one-half the telephone development of the United States.

COMPARISON OF
DENSITY OF POPULATION
AND
TELEPHONE DEVELOPMENT
JAN. 1, 1911

NOTE: Density of population in Belgium and telephone development (telephones per 100 population) in the United States taken as 100%.



Passing from the general survey of telephone development of the various countries of the world, it is interesting to note the development of the large cities of Europe and the United States as shown in the chart opposite. For further analysis the cities are divided into five groups, i. e.:

Group I—Cities with population above 800,000.
Group II—Cities with population from 350,000 to 800,000.
Group III—Cities with population from 200,000 to 350,000.
Group IV—Cities with population from 125,000 to 200,000.
Group V—Cities with population from 100,000 to 125,000.

January 1, 1911.

	No. of Cities		Population		Number of Telephones		Telephones Per 100 Pop.	
Groups of Cities	U.S.	Europe	U. S.	Europe	U. S.	Europe	U. S.	Europe
I. Over 800,000	4	14	10,009,000	25,292,000	907,823	721,381	9.0	2.8
II. 350,000-800,000	12	31	6,190,000	15,390,000	634,614	358,365	10.2	2.3
III. 200,000-350,000	14	43	3,656,000	11,212,000	488,716	341,543	13.3	3.0
IV. 125,000-200,000	16	46	2,401,000	7,224,000	251,332	157,630	10.5	2.2
V. 100,000-125,000	18	25	1,969,500	2,814,000	213,254	67,389	10.8	2.4
Total cities	64	159	24,225,500	61;932,000	2,495,739	1,646,308	10.3	2.6
Entire Country			93,104,000	437,861,000	7,595,938	2,966,553	8.1	0.7
Ratio of Cities to Entire Country			26%	14%	33%	55%		

The preceding table discloses the following striking facts.

First: The United States has about one-fifth the population of Europe;

Second: Europe has 2½ times as many cities above 100,000 population as the United States;

Third: In Europe 14% of the total population and 55% of the total telephones are found in 159 cities;

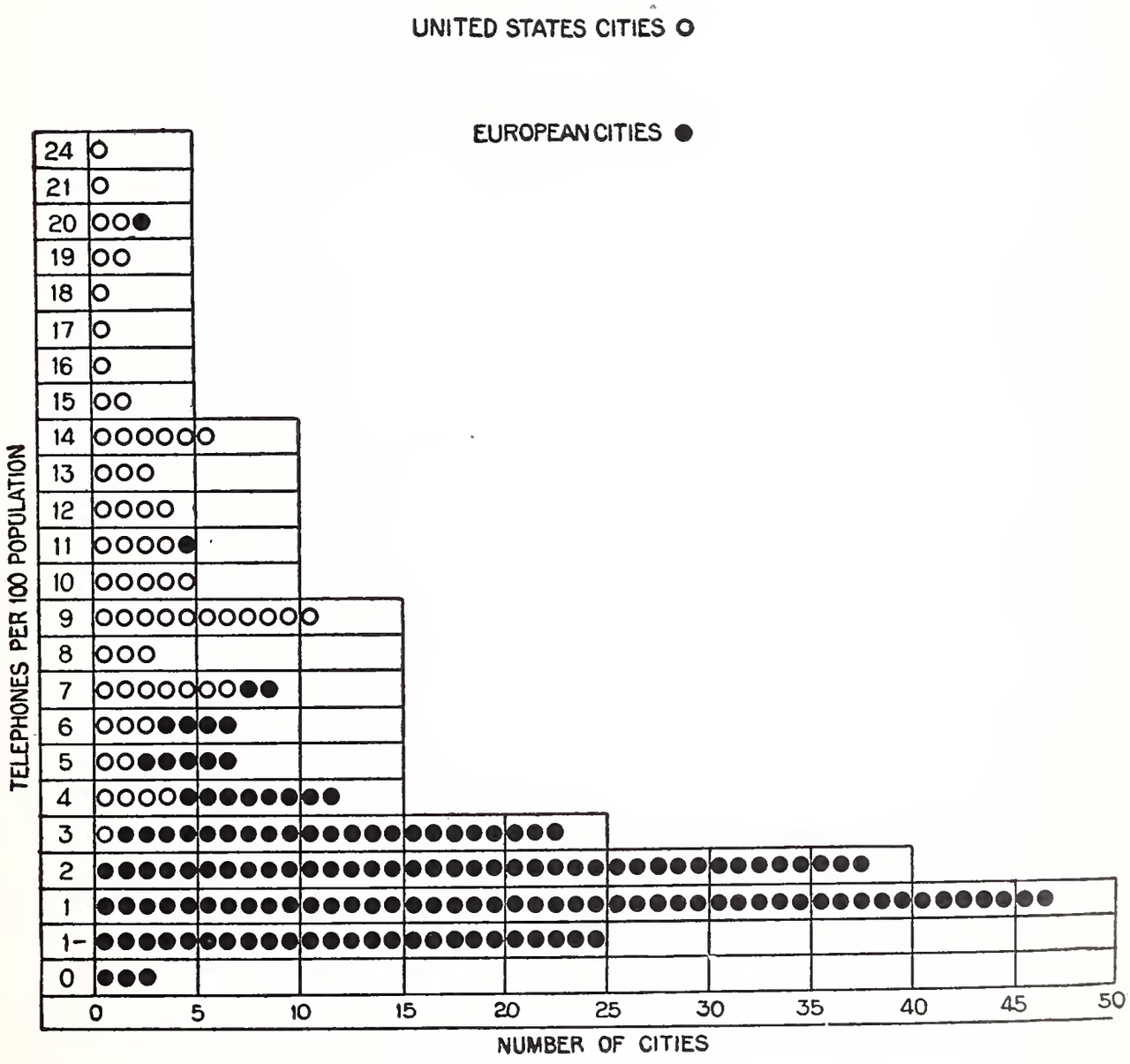
Fourth: In the United States 26% of the total population and 33% of the total telephones are found in 64 cities.

The most salient feature of the table is, however, the disparity in the figures showing average city developments: 2.6 for Europe, and 10.3 for the United States. Moreover, although the 159 European cities have about 260% of the population of the 64 United States cities, yet they have but 66% of the telephones in the 65 United States cities.

Referring to Group III (200,000 to 350,000 population) we find the 43 European cities do not have one-fourth the telephones per 100 population of the 14 United States Cities. Again, referring to Groups IV and V, the 71 European cities had but 50% of the telephones of the 34 United States cities.

The chart opposite also demonstrates that Europe has but one highly developed city (Stockholm) with 19.9 telephones per 100 population. Indeed, there are only thirteen cities with over 100,000 population in Europe with five or more telephones per 100 population. The great majority of European cities have only from one to three telephones per 100 population, while 25 cities have less than one. Furthermore, there are at present three large cities in Europe having no telephone development whatever, Constantinople, Adrianople and Saloniki.

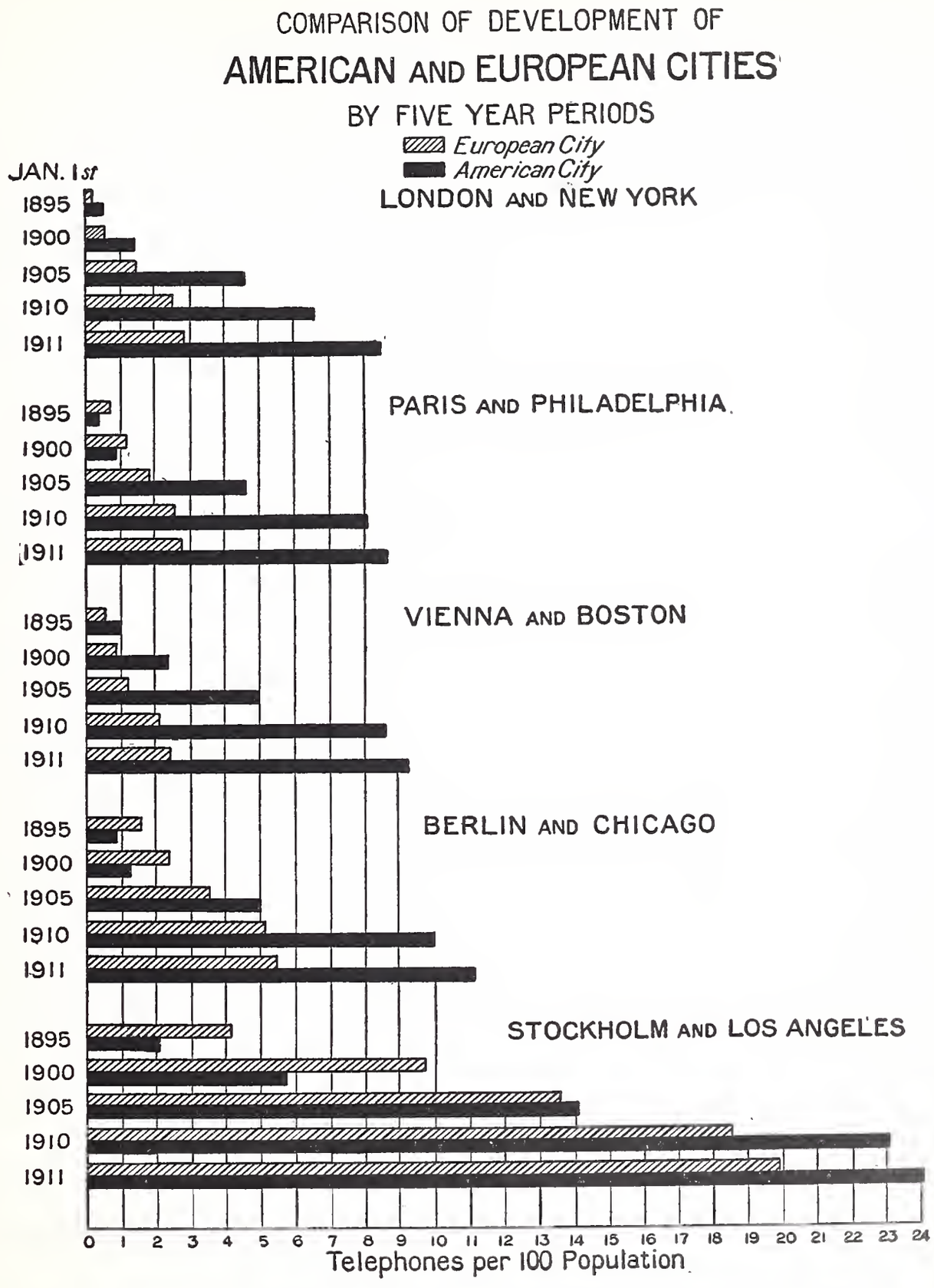
NUMBER OF CITIES OF EUROPE AND THE UNITED STATES
WITH OVER 100,000 POPULATION,
CLASSIFIED IN RESPECT TO THEIR TELEPHONE DEVELOPMENT PER 100 POP'N
JANUARY 1, 1911



The subsequent table reviews the development of nine large European cities for sixteen years, and the chart on the opposite page compares five of these cities with five United States cities. Excepting Stockholm, none of the European cities has reached the development of New York, while the highest development in the United States is 4.1 points above the corresponding highest development in Europe. Neither London, Paris, Vienna, nor St. Petersburg have reached a development of three telephones per 100 population. Berlin and Hamburg are 5.3 and 4.7 respectively, and Christiana and Copenhagen, with 6.9 and 7.0,, respectively, are about equally developed.

Cities	Telephones Per 100 Population				
	Jan. 1 1895	Jan. 1 1900	Jan. 1 1905	Jan. 1 1910	Jan. 1 1911
Europe—					
Stockholm	4.1	9.7	13.6	18.5	19.9
Copenhagen	1.2	3.0	4.9	6.7	7.0
Christiania	3.0	5.4	5.4	6.7	6.9
Berlin	1.6	2.3	3.5	5.1	5.3
Hamburg-Altona	1.5	2.2	3.6	4.6	4.7
London	0.2	0.6	1.4	2.5	2.8
Paris	0.7	1.2	1.8	2.5	2.7
Vienna	0.5	0.8	1.2	2.1	2.3
St. Petersburg	0.2	0.3	0.6	1.9	2.2
United States—					
Los Angeles	2.0	5.7	14.1	23.1	24.0
Chicago	0.8	1.3	4.9	9.8	11.0
Boston	1.0	2.3	4.8	8.6	9.2
Philadelphia	0.3	0.9	4.6	7.9	8.6
New York	0.6	1.4	4.6	7.6	8.3

In actual number of telephones, Jan. 1, 1911, Berlin, London and Paris, with a combined total of 403,500 telephones, are about even with New York (402,000). The latter approximates very nearly the combined telephones of 14 European States.


COMPARISON OF DEVELOPMENT OF
AMERICAN AND EUROPEAN CITIES
BY FIVE YEAR PERIODS
European City
American City
JAN. 1st
LONDON AND NEW YORK
1895
1900
1905
1910
1911
PARIS AND PHILADELPHIA
1895
1900
1905
1910
1911
VIENNA AND BOSTON
1895
1900
1905
1910
1911
BERLIN AND CHICAGO
1895
1900
1905
1910
1911
STOCKHOLM AND LOS ANGELES
1895
1900
1905
1910
1911
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Telephones per 100 Population

b. Wire Mileage.

The next statistical table and chart on the opposite page view the telephone development of the world in point of wire plant January 1, 1911. At this date the grand total of telephone wire mileage was about 27,000,000, of which the United States possessed 61.7%, Europe 32.5%, Canada 2.6%, South America 0.5%, and all other countries 2.7%. Thus the United States has almost twice the total telephone wire of all Europe. The German Empire, though possessing the largest number of telephones of any of the European States, has but one-fifth the telephone wire of the United States, and Great Britain but one-eighth.

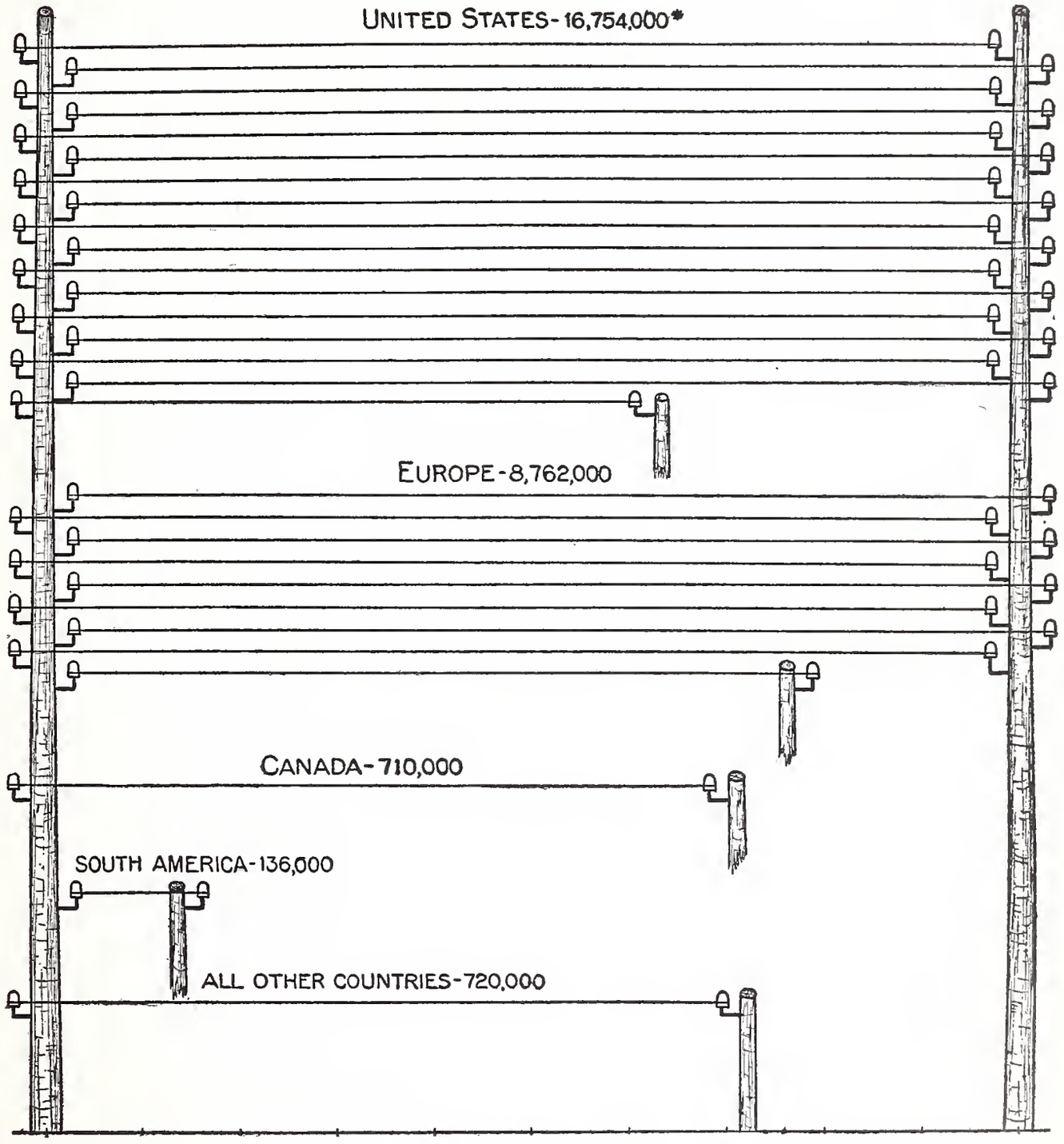
MILES OF TELEPHONE WIRE

Division	Miles of Wire Jan. 1, 1911	Increase during 1910		Per cent of Total Jan. 1, 1911
		Miles	%	
United States	16,633,590	1,383,141	9.0%	61.7
Canada	709,708	102,960	16.9	2.6
Europe:—				
Austria	287,523	31,179	12.1	1.0
Belgium	147,252	9,076	6.5	0.6
Bosnia	1,403	95	7.2	..
Bulgaria	5,762	523	10.0	..
Denmark	254,989	29,837	13.2	0.9
Finland	76,793	6,982	10.0	0.3
France	831,169	93,527	12.7	3.0
German Empire	3,553,504	329,027	10.2	13.2
Great Britain	2,116,368	91,420	4.5	7.9
Greece	5,323	1,064	24.0	..
Hungary	201,636	22,604	12.6	0.8
Italy	161,628	14,693	10.0	0.6
Luxembourg	3,612	62	1.7	..
Netherlands	141,478	19,082	15.6	0.5
Norway	129,168	8,383	6.9	0.5
Portugal	21,114	1,858	9.6	..
Roumania	45,333	4,175	10.0	..
Russia	260,049	18,630	7.7	1.0
Servia	8,045	678	9.2	..
Spain	54,027	4,806	9.8	..
Sweden	245,757	23,108	10.4	0.9
Switzerland	210,032	9,192	4.5	0.8
Total	8,761,965	719,999	8.9	32.5
South America	136,676	..	..	0.5
All other countries	720,168	..	..	2.7
Total World	26,962,107	2,384,653	9.7	100.0

TELEPHONE WIRE MILEAGE OF THE WORLD

JAN. 1st 1911

27,082,000 MILES*



Each full Strand of Wire represents 1,000,000 Miles.

*Includes 120,000 miles U. S. Railroad Telephone Wire.

The following table shows the estimated total length of telephone and telegraph wires January 1, 1911, including railroad telephone and telegraph wire.

The statistics place the total length of telephone and telegraph wires in the world January 1, 1911, at 34,500,000 miles. Of this total, telephone wire took 78%, telegraph wire (including cables) 17%, and railroad telegraph wire 5%. Again, the United States took 62% of the total telephone wire, and 34% of the total telegraph wire (excluding cables and railroad telegraph wire.)

LENGTH OF WORLD'S TELEPHONE AND TELEGRAPH WIRE.

(Partly Estimated)

JANUARY 1, 1911.

	Miles	
TELEPHONE WIRE:		
United States	16,634,000	
Canada	709,000	
Europe	8,762,000	
All other Countries	857,000	
	26,962,000	
U. S. RAILROAD TELEPHONE WIRE	120,000	
Total Telephone Wire		27,082,000
TELEGRAPH WIRE:		
United States	1,849,000	
Canada	153,000	
Europe	2,352,000	
All other Countries	1,090,000	
	5,444,000	
SUBMARINE TELEGRAPH WIRE (in cables)	314,000	
RAILROAD TELEGRAPH WIRE	1,726,000	
Total Telegraph Wire		7,484,000
Grand Total		34,566,000

c. Telephone Investment

The statistics referring to investment do not always represent the actual replacement values of the various telephone plants, as such information is not recorded by the majority of foreign telephone administrations. The only data available in many cases are the aggregate amounts that have been put into the business since its inception. The world's telephone investment January 1, 1911, is estimated at $1,561,800,000, equivalent to $139 per telephone. This total investment is thus approximately equal to the value of the corn crop of the United States in 1911.

The subjoined table gives the estimated telephone investment of the world January 1, 1911:

Division	January 1, 1911	
	Investment	Per cent of Total
United States	$ 956,700,000	61.2%
Canada	36,700,000	2.4%
Europe	518,400,000	33.2%
All other countries	50,000,000	3.2%
Total	$1,561,800,000	100.0%

Figured on the respective number of telephones at the same date, the investment per telephone is:

United States	$126
Canada	129
Europe	175
All other countries	118
Total world	139

The investment representing "all other countries" includes $16,456,000 for the Commonwealth of Australia and New Zealand, $4,795,000 for the Union of South Africa, $15,223,000 for Japan, and about $6,668,000 for Brazil and Chili together.

During the year 1910, $145,500,000 was added to the telephone investment of the world, so that the above total of $1,561,800,000 represents an increase of 10% over the corresponding investment Jan. 1, 1910. In the United States alone, the estimated increase in investment during 1910 amounted to $97,600,000, or, excluding Europe, considerably more than the total cost of all telephone plants in service in the entire world.

In regard to more detailed investment statistics given on the following page, perhaps the most striking feature of the table is the high figure for investment per telephone in many of the important European States. For instance, Austria, Belgium, France, Great Britain, Hungary, Spain and Switzerland all show an investment per telephone of over $200.

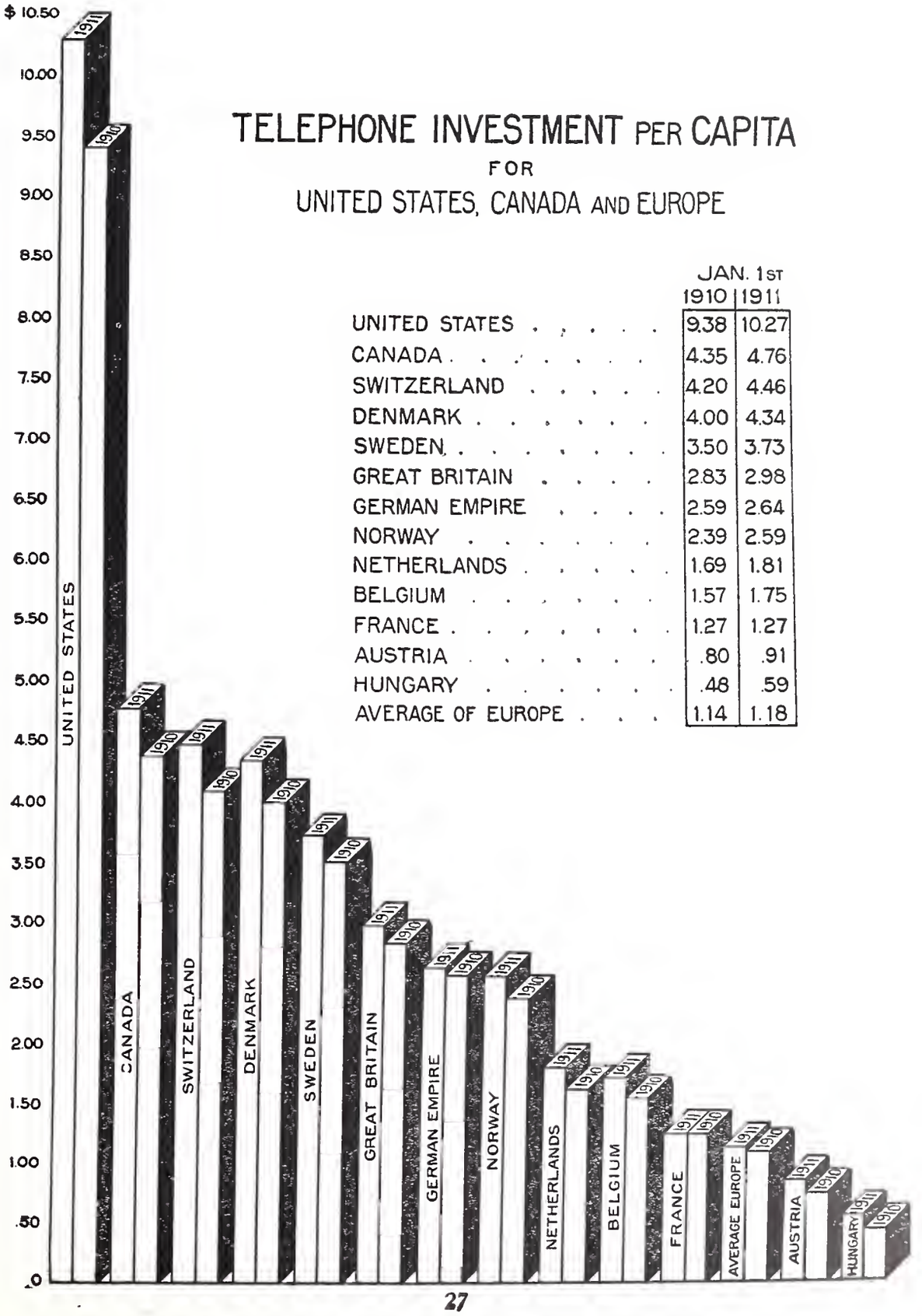
The German Empire, Great Britain, and France combined have slightly more than two-thirds the entire telephone investment of Europe.

TELEPHONE INVESTMENT OF THE WORLD, JANUARY 1, 1911

Division	Investment	Investment		Investment per Capita	
		% of Total	per Telephone	1910	1911
United States	$956,700,000	61.2%	$126	$9.38	$10.27
Canada	36,700,000	2.4%	129	4.33	4.76
Europe:—					
Austria	26,200,000	1.7	233	.80	.91
Belgium	13,195,000	0.9	277	1.57	1.75
Bosnia	245,000	..	328	0.07	0.13
Bulgaria	400,000	..	174	0.09	0.09
Denmark	11,713,000	0.8	124	4.00	4.34
Finland	2,246,000	0.2	74	0.69	0.72
France	50,000,000	3.2	215	1.27	1.27
German Empire	171,304,000	11.0	160	2.59	2.64
Great Britain	134,410,000	8.5	207	2.83	2.98
Greece	200,000	..	112	0.08	0.08
Hungary	12,400,000	0.8	212	0.48	0.59
Italy	9,600,000	0.6	137	0.28	0.28
Luxembourg	629,000	..	189	2.37	2.46
Netherlands	10,798,000	0.7	167	1.69	1.81
Norway	6,214,000	0.4	99	2.39	2.59
Portugal	1,174,000	0.1	174	0.20	0.22
Roumania	2,583,000	0.2	172	0.29	0.36
Russia	18,950,000	1.1	126	0.14	0.14
Servia	600,000	..	228	0.21	0.20
Spain	8,100,000	0.5	324	0.45	0.43
Sweden	20,619,000	1.3	110	3.50	3.73
Switzerland	16,797,000	1.1	213	4.20	4.46
Total	518,377,000	33.2%	$175	$1.14	$1.18
All other countries	50,000,000	3.2%	$118	..	..
Total world	$1,561,777,000	100.0%	$139	..	..

Excepting the German Empire and Great Britain, none of the European States exceeds $100,000,000, and the majority have invested less than $20,000,000 apiece. Of the Scandinavian kingdoms, Sweden has approximately twice the investment of Denmark, which in turn has about twice that of Norway.

Viewing telephone investment from a per capita basis, a very different situation is revealed. A glance at the chart below shows that of the European countries Switzerland leads, and Denmark has advanced to second position; on the other hand, though the German Empire occupied first rank in point of total investment, it takes fifth place in point of investment per capita. The per capita investment of the United States ($10.27) is about nine times that of Europe ($1.18). Of the European countries shown on the chart, Hungary has the lowest per capita investment ($.59), and Austria has not yet reached an investment of $1.00 per capita.



TELEPHONE INVESTMENT PER CAPITA
FOR
UNITED STATES, CANADA AND EUROPE

	JAN. 1ST 1910	1911
UNITED STATES	9.38	10.27
CANADA	4.35	4.76
SWITZERLAND	4.20	4.46
DENMARK	4.00	4.34
SWEDEN	3.50	3.73
GREAT BRITAIN	2.83	2.98
GERMAN EMPIRE	2.59	2.64
NORWAY	2.39	2.59
NETHERLANDS	1.69	1.81
BELGIUM	1.57	1.75
FRANCE	1.27	1.27
AUSTRIA	.80	.91
HUNGARY	.48	.59
AVERAGE OF EUROPE	1.14	1.18

4. Investment---Telephone and Telegraph

It is interesting to compare the telephone investment of the world with that of the telegraph (including submarine cables). In the absence of any definite information covering the entire world on that subject, only an estimate can be made. Using the total telegraph wire mileage, January 1, 1911, as a basis, the telegraph investment may be estimated at about $700,000,000. There are also 314,000 miles of submarine cable representing an estimated investment of $350,000,000, so that the total telegraph investment of the world January 1, 1911, may be placed at $1,050,000,000, as compared with a telephone investment of $1,561,777,000 at the same date.

World—Jan. 1, 1911.	Investment.	
Telephone	$1,561,777,000	60%
Telegraph	707,720,000	27%
Cable	350,000,000	13%
Total	$2,619,497,000	100%

5. Earnings for 1909--Telephone and Telegraph

The figures for gross telephone earnings in European countries are official, but those quoted for "all other countries" are mostly estimated. The total gross telephone earnings of the world for the year 1909 may be placed at $329,000,000, of which the United States earned $221,471,000 (67.4%), Canada 6,752,000 (2%), Europe $91,331,000 (27.8%), and all other countries $9,163,500 (2.8%).

The following table shows the gross telephone earnings of the various European countries, ranging from $241,000 (Portugal) to $32,331,000 (German Empire). The average earning per telephone for total Europe was $35.40.

TELEPHONE GROSS EARNINGS OF THE UNITED STATES, CANADA, EUROPE AND ALL OTHER COUNTRIES

(Partly Estimated)

YEAR 1909

Division	Gross Earnings	% to Total Earnings	Increase During 1909	Avg. Earnings per Telephone
United States	$221,471,000	67.4%	$20,881,000	$32.87
Canada	6,752,032	2.0	1,161,000	31.87
Europe—				
Austria	3,704,990	1.1	584,000	41.45
Belgium	2,066,740	0.6	152,000	50.75
Bosnia	11,555	..	1,900	21.90
Bulgaria	65,135	..	7,000	31.65
Denmark	2,040,158	0.6	233,000	24.45
Finland	448,518	..	..	15.95
France	8,161,600	2.4	1,098,000	40.20
German Empire	32,330,909	9.8	3,407,000	35.00
Great Britain	23.113,326	7.0	1,858,000	39.40
Greece	37,048	..	4,000	26.40
Hungary	1,859,205	0.6	155,000	38.85
Italy	2,416,902	0.8	348,000	42.70
Luxembourg	62,697	..	6,000	20.80
Netherlands	1,731,700	0.5	244,000	32.45
Norway	1,159,864	0.3	40,000	21.35
Portugal	240,516	..	10,000	40.90
Roumania	277,947	..	35,000	22.50
Russia	4,756,475	1.4	469,700	39.00
Servia	58,575	..	4,000	37.65
Spain	831,125	..	38,000	35.20
Sweden	3,959,765	1.2	309,000	23.60
Switzerland	1,996,439	0.6	169,000	27.95
Total	91,331,189	27.8	9,172,600	35.40
All other countries	9,163,500	2.8		30.00
Total world	$328,717,721	100.0%		

On account of the almost universal custom of European governments of conducting the telephone as a branch of the postal and telegraph services, practically no European government keeps its accounts in such a manner as to reveal the true net financial result of its telephone service.

The following statistical table summarizes the gross telephone and telegraph earnings of Europe, as illustrated by the chart on the opposite page. It is estimated that in Europe the gross telegraph earnings are about two-thirds of the gross telephone earnings, while in the United States they are about one-fifth of the gross telephone earnings.

Referring only to the larger European States, this statistical table reveals the fact that in most of the European countries gross telephone earnings are substantially larger than gross telegraph earnings. Indeed, telephone earnings are over twice as large as telegraph earnings in four countries; in Switzerland they are two and a half times as large, in Germany and Denmark they are four times as large, and in Sweden, they are over six times as large. In three countries, on the other hand, telegraph earnings still exceed telephone earnings. These countries are Italy, Spain, and Russia—in the last two countries telegraph earnings are over twice telephone earnings. Finally, it is noteworthy that in France telegraph earnings nearly equal telephone earnings.

COMPARISON OF THE GROSS TELEPHONE AND TELEGRAPH EARNINGS OF EUROPEAN COUNTRIES FOR 1909.

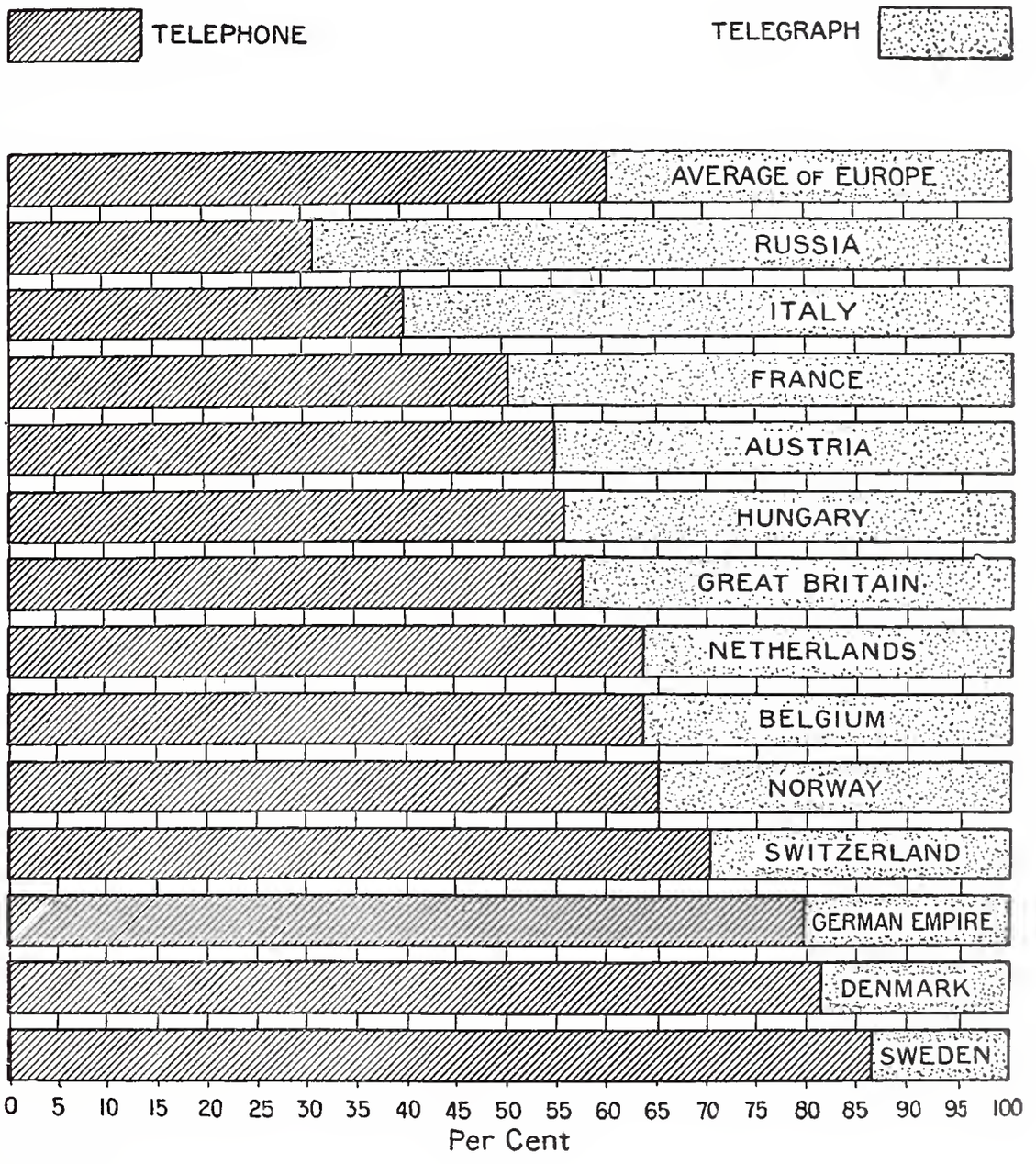
Country	Gross Telephone Earnings	Gross Telegraph Earnings	Total Earnings	Per cent of Total Gross Earnings	
				Telephone	Telegraph
Austria	$3,704,990	$3,162,571	$6,867,561	54%	46%
Belgium	2,066,740	1,191,450	3,258,190	63%	37%
Bosnia	11,555	281,324	292,879	4%	96%
Bulgaria	65,135	294,610	359,745	18%	82%
Denmark	2,040,158	488,697	2,528,855	81%	19%
France	8,161,600	8,101,828	16,263,428	50%	50%
German Empire	32,330,909	8,771,920	41,102,829	79%	21%
Great Britain	23,113,326	15,960,869	39,074,195	59%	41%
Greece	37,048	346,794	383,842	10%	90%
Hungary	1,859,205	1,491,079	3,350,284	55%	45%
Italy	2,416,902	3,820,513	6,237,415	39%	61%
Luxembourg	62,697	16,338	79,035	79%	21%
Netherlands	1,731,700	1,011,475	2,743,175	63%	37%
Norway	1,159,864	642,875	1,802,739	64%	36%
Portugal	240,516	849,862	1,090,378	22%	78%
Roumania	277,947	595,106	873,053	32%	68%
Russia and Finland	5,204,993	12,408,158	17,613,151	30%	70%
Servia	58,575	120,823	179,398	33%	67%
Spain	831,125	2,032,422	2,863,547	29%	71%
Sweden	3,959,765	615,049	4,574,814	86%	14%
Switzerland	1,996,439	812,661	2,809,100	71%	29%
Total Europe	$91,331,189	$63,016,424	$154,347,613	59%	41%

COMPARISON OF

TELEGRAPH AND TELEPHONE GROSS EARNINGS

PER CENT OF EACH TO TOTAL IN EUROPEAN COUNTRIES

1909



6. Traffic--Mail, Telegraph and Telephone

Instructive as it would be to compare the traffic of the other two branches of transmission of intelligence—the mail and the telegraph—with the telephone traffic of the world, such a comparison would only be speculative on account of the lack of statistical material. There is, however, sufficient statistical information to permit a comparison of the traffic of these three services, both in the United States and in Europe, during the year 1909. The result is as follows:

Type of Message	EUROPE		UNITED STATES	
	Number during 1909	% of Total Europe	Number during 1909	% of Total U. S.
First Class Mail Matter	15,387,000,000	74.4%	8,793,000,000	40.9%
Telegrams	345,000,000	1.7%	98,000,000	0.4%
Telephone Conversations	4,937,000,000	23.9%	12,617,000,000	58.7%
Total	20,669,000,000	100.0%	21,508,000,000	100.0%

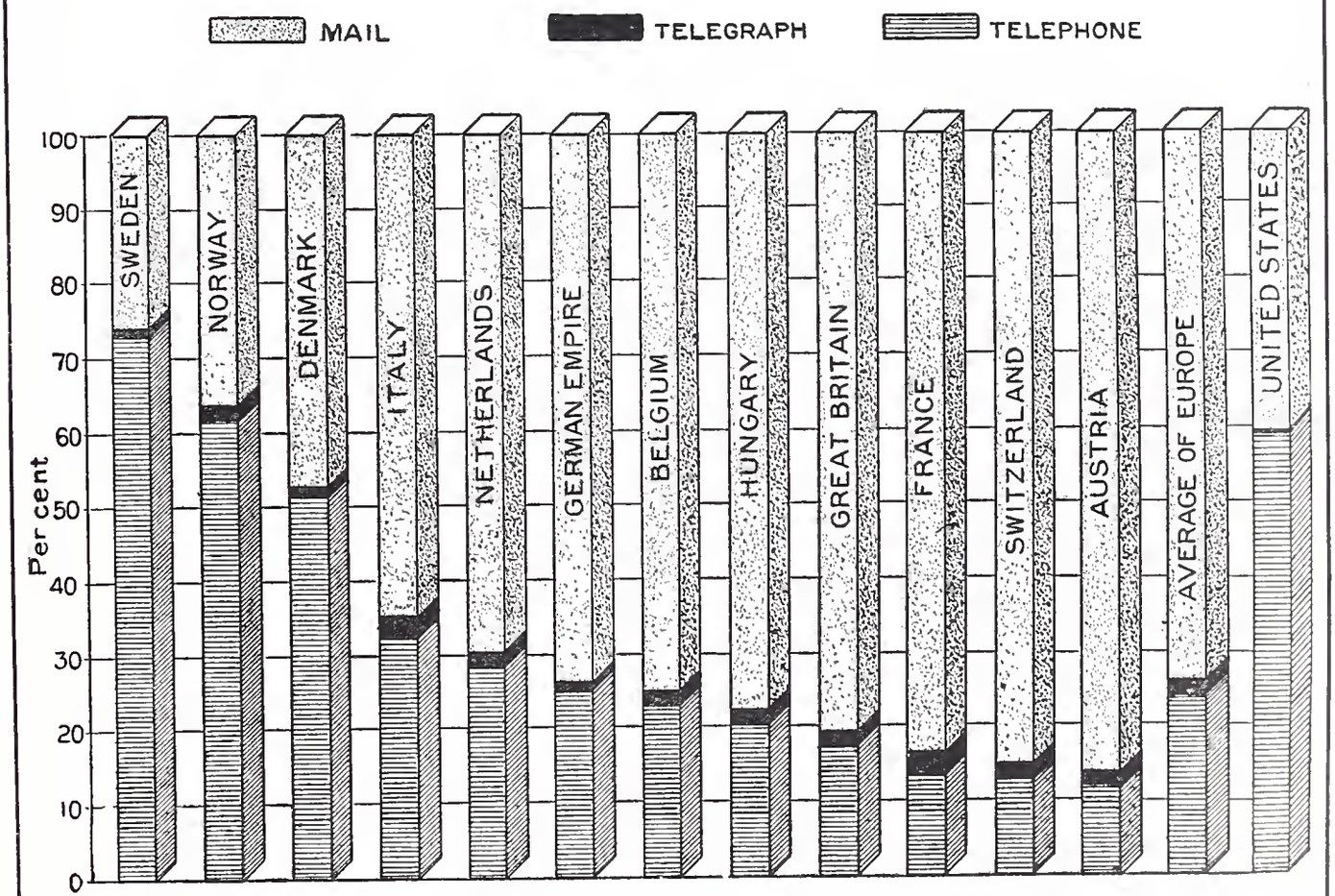
The figures show that although Europe has about three and a half times the telegraph traffic and nearly twice the first-class mail traffic, it has only one-third the telephone traffic of the United States.

The next table shows the first-class mail, telegraph and telephone traffic per 1,000 population for Europe and the United States during 1908 and 1909.

Type of Message	EUROPE			UNITED STATES		
	1909	1908	% Incr.	1909	1908	% Incr.
First Class Mail matter.....	35,533	34,766	2.2%	96,090	90,062	6.7%
Telegrams	798	769	3.7%	1,076	1,039	3.5%
Telephone Conversations	11,400	10,585	7.7%	137,882	134,335	2.6%

RATIO OF
MAIL, TELEGRAPH AND TELEPHONE MESSAGES
YEAR 1909

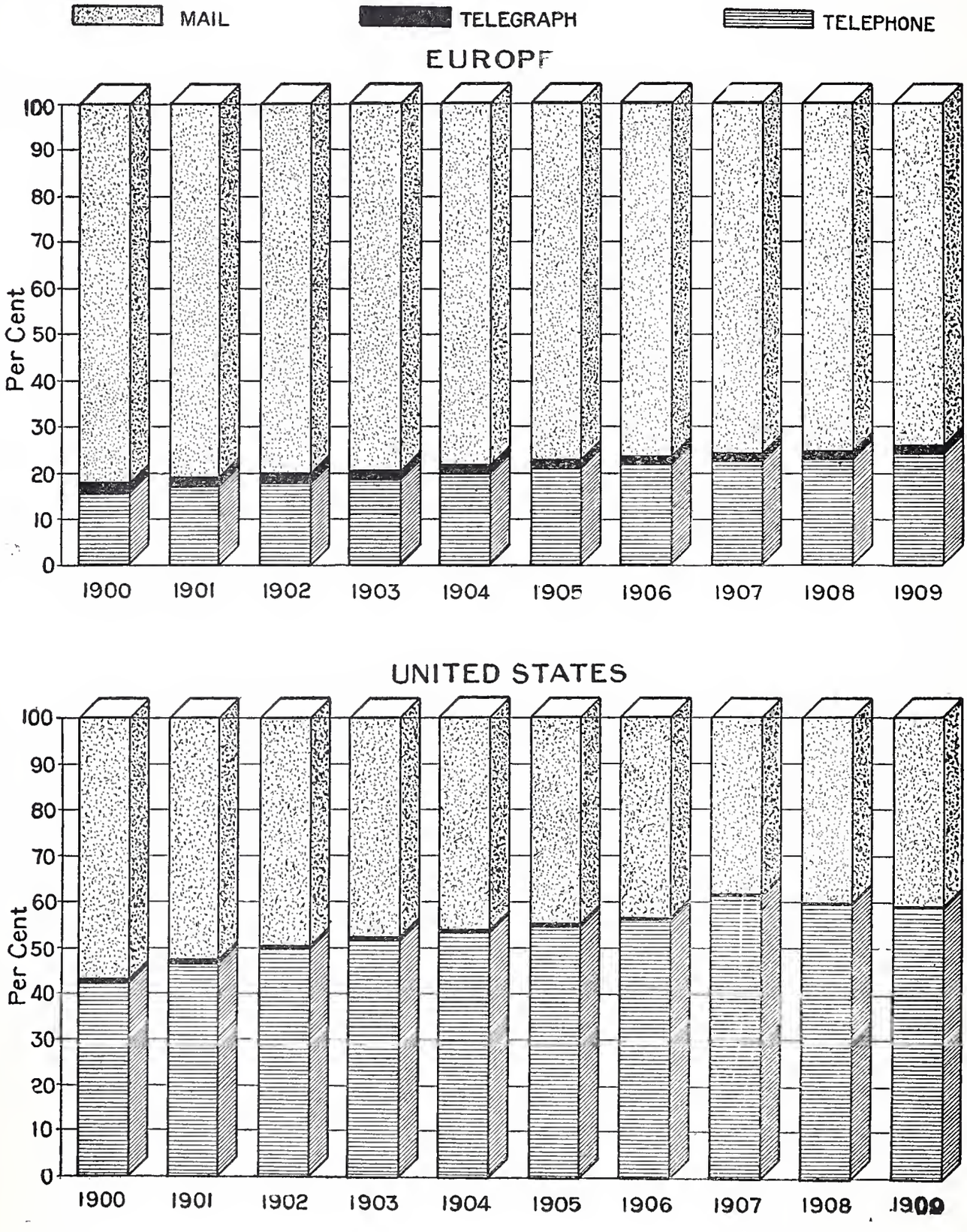
COUNTRY	PER CENT OF TOTAL MESSAGES.		
	TELEPHONE	TELEGRAPH	MAIL
SWEDEN	72.8	0.7	26.5
NORWAY	61.9	1.5	36.6
DENMARK	51.9	1.0	47.1
ITALY	32.1	3.1	64.8
NETHERLANDS	28.5	1.8	69.7
GERMAN EMPIRE	25.4	0.9	73.7
BELGIUM	22.8	1.8	75.4
HUNGARY	20.4	1.8	77.8
GREAT BRITAIN	17.7	1.8	80.5
FRANCE	13.8	3.4	82.8
SWITZERLAND	13.5	1.5	85.0
AUSTRIA	12.9	1.2	85.9
AVERAGE OF EUROPE	23.9	1.7	74.4
UNITED STATES	58.7	.4	40.9

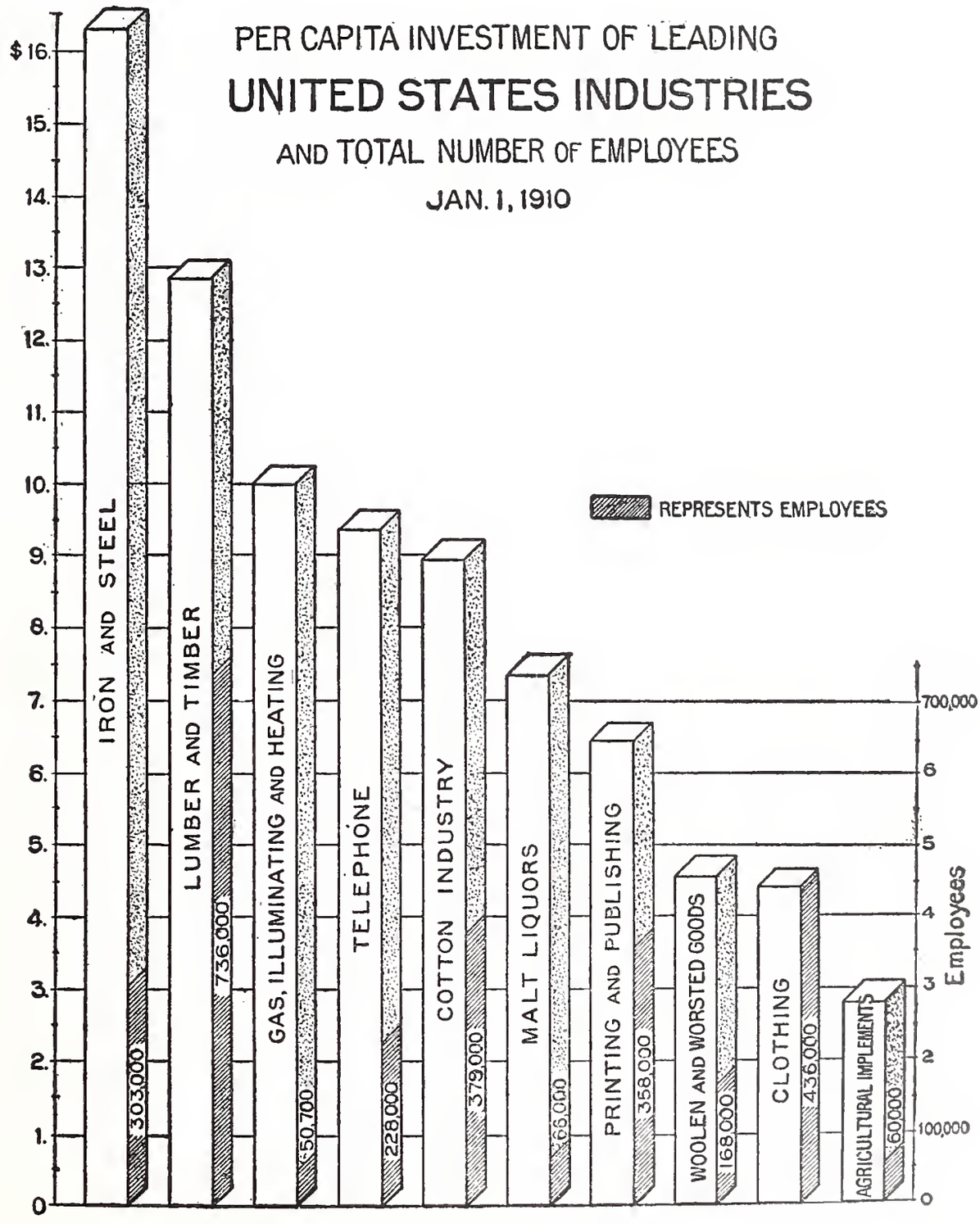


RATIO OF MAIL, TELEGRAPH AND TELEPHONE MESSAGES

EUROPE AND UNITED STATES

1900 TO 1909



7. A Comparison With Other Industries

The magnitude of the United States telephone investment per capita may be emphasized by comparing the telephone with some of the other leading United States industries. Such a comparison is based on recent special reports by the United States Census Office, publishing the requisite data as of January 1, 1910. The chart shown below gives the result of a comparison of the telephone business with ten large United States industries. Despite the fact that the telephone has been in use but thirty-five years, the telephone investment per capita January 1, 1910, is the fourth largest, yielding only to the Iron & Steel, Lumber, and Gas & Heating industries.